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RAILWAY AGE

February 8, 1971

THE LINDENWOLD LINE:

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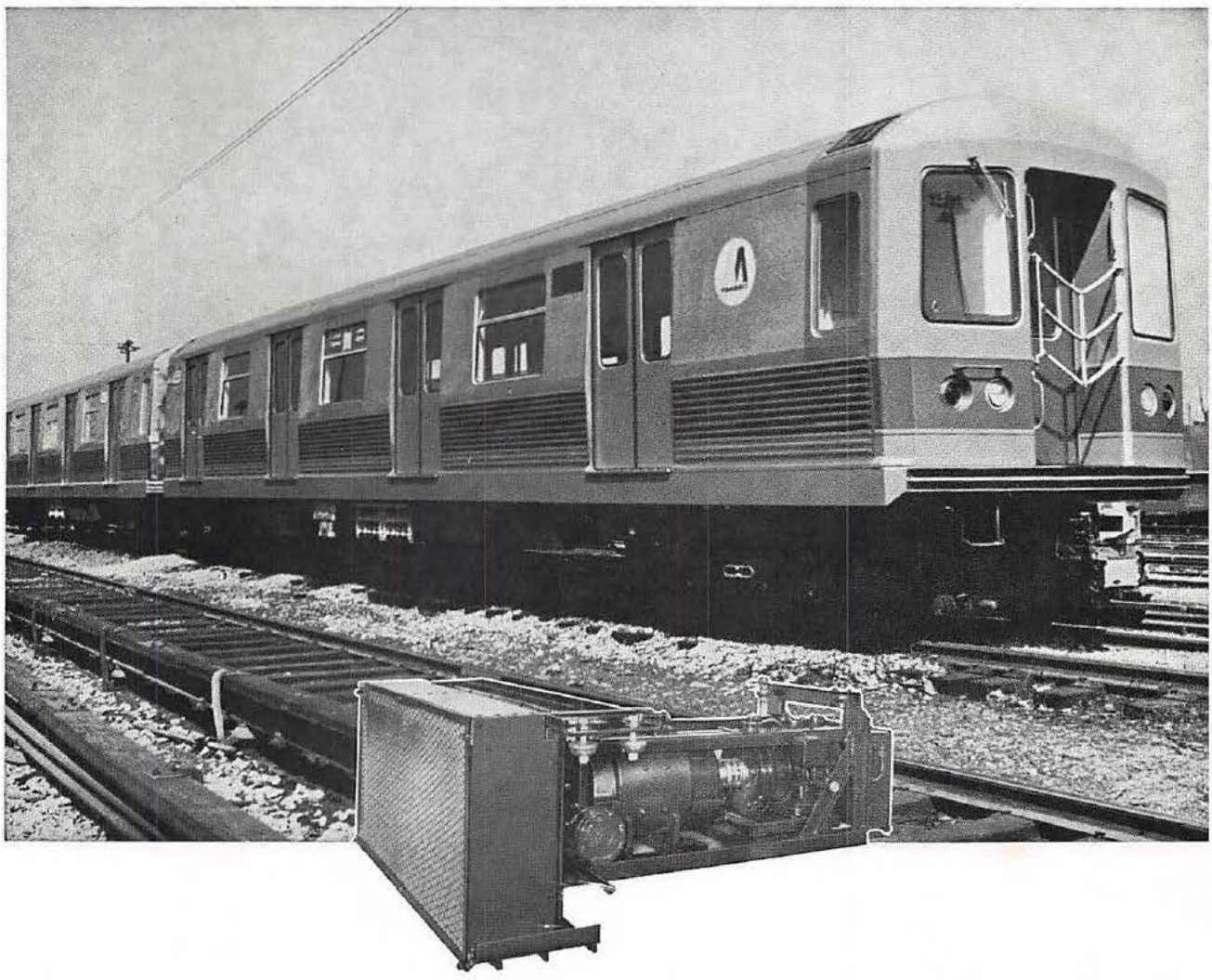
JEANNETTE PA 15644

"Safety" air conditioning: the system of the 70's



Over 600 "Safety" units keep things cool on these NYCTA cars. The component type air conditioning equipment consists of two independent systems, each rated 10-ton refrigeration capacity, which are regulated by a common temperature control unit. During operation, a mixture of filtered outside air and air recirculated from within the car is drawn into the overhead evaporator and blower units, conditioned, and diffused into the car body.

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LUBRICATION ENGINEERING NEWS

Cities Service research and development program constantly producing new, improved diesel engine lubes

Cities Service Oil Company maintains an aggressive and continuing research and development program at the company's Princeton, New Jersey lubrication research laboratories. Improved products for railroad applications, both on track and off, are under constant development and testing. Within the past two years alone, superior lubricants have been introduced for a number of different applications. In many cases, these advanced railroad lubes

have taken the place of two or more previous products and thus served to shorten the list of "required" lubricants in customers' inventories. For information on specific products now under development and available for test application programs, drop a line to L. M. Fleming, Transportation, Sales Department, Cities Service Oil Company, Box 300, Tulsa, Oklahoma 74102.

New CITGO RD-836 diesel engine oil extends service life of high horsepower locomotives

The promise of pulling more tonnage with fewer units and a resultant decrease in maintenance costs has remained little more than a promise in many cases. Higher horsepower diesel engines place greater demands on the crankcase oil and on those moving parts whose life depends on effective lubrication. Conventional high dispersant diesel lube oils just couldn't handle the load. Something better had to be developed.

That something better turned out to be CITGO RD-836, specifically formulated to get the maximum usage from each new high horsepower engine. RD-836 withstands more heat for longer periods; neutralizes greater amounts of acid; keeps oil filters and engine surfaces cleaner. Wear is reduced and oil life is significantly extended, resulting in less downtime and lower maintenance costs.

Ten major railroads are now using CITGO RD-836. In case after case, examination of pistons, rings and cylinders following thousands of hours of operation shows virtually no wear.

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Among the properties which enhance the performance capabilities of CITGO RD-836 diesel engine oil include excellent reserve alkilinity for extended TBN retention, very fine compatibility with other approved diesel engine oils and unusual stability, which helps eliminate clutch slippage.

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Dispersant detergent keeps engine parts clean, filters free-flowing.

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RAILWAY AGE

February 8, 1971 • Vol. 170 No. 3

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Railway Age, established in 1856, is indexed by the Business Periodicals Index, the Engineering Index Service and the Public Affairs Information Service. Name registered in U.S. Patent Office and Trade Mark Office in Canada.
Published twice monthly by the Simmons-Boardman Publishing Corporation, 508 Birch St., Bristol, Conn. 06010.
Railroad employees' subscription rate, U.S. possessions, Canada and Mexico, $6 one year, $9 two years, all others $15 for one year, payable in advance and postage paid. To railroad employees elsewhere in the western hemisphere, $10 a year; in the eastern hemisphere, $15 a year. Single copies 60¢, except special issues.
Address all subscriptions, change of address and correspondence concerning them to Subscription Dept., Railway Age, P.O. Box 530, Bristol, Conn. 06010.
Change of address should reach us three weeks in advance of next issue date. Send old address with new enclosing, if possible, your address label. Post Office will not forward copies unless you provide extra postage.

Member of ABC RPI

Circulation Dept.: John Rogers Director of Circulation, 350 Broadway, New York, N.Y. 10013. POSTMASTER—SEND FORM 3579 TO P.O. BOX 530, BRISTOL, CONN. 06010.

Printed at the Hughes Printing Co., 34 North Crystal St., East Stroudsburg, Pa. 18301. Second-class postage paid at Bristol, Conn., and at additional mailing offices.

supporting **ASTRO**

Inside

LUTHER MILLER

ARE RAILS WORTH SAVING?

"If railroads do die," one Wall Street analyst observes, "it will be at least partly because they have talked themselves to death. It is my own view that railroads are inherently sound and viable, and if they are temporarily not well their illness is one that can be corrected by a good dose of fair play. Yet too many railroad men—and this goes for a lot of suppliers, too—are talking in such a way that you begin to wonder if railroads are worth saving at all."

Our Wall Streeter may overstate the case, but he does *have* a case.

THE EVIDENCE SAYS YES

Railroads complain (and with good reason) that as an industry they were able to show net earnings of only around $250 million in 1970, on gross operating revenues of $12 billion. But isn't the remarkable thing not that they did so badly, but that they did so well, with the economy in a state of decline, with one railroad showing a loss bigger than the entire industry's net? Look at the competition: Intercity truckers netted only $230 million on revenues of $14 billion. Airlines lost $45 million on revenues of $7 billion.

Earnings records of some individual railroads are reported on page 13 of this issue. What airline, what trucker, was able to do as well as the Southern, the Southern Pacific, the Norfolk & Western, the Union Pacific, the Seaboard Coast Line?

What these carriers demonstrate is that railroads can be contributors to, not a drain on, the economy. This is the best argument available, we submit, for the reforms proposed by ASTRO—reforms that would wipe out the disease now afflicting a handful of carriers before it can spread to others.

As our Wall Street friend suggested, suppliers are doing their own share of doom-saying. "Business has never been worse," they grumble.

Business is not good enough, certainly—and it will not be until implementation of ASTRO permits railroads to invest in new plant and equipment at levels that measure up to the needs of the future.

But "never worse"? Hardly. Railroads did order, in the "bleak" year 1970, more than 50,000 new freight cars (page 16). While that was a long way from the 84,000 ordered in 1969, it was a longer way from the 17,518 ordered in 1958, the 30,613 ordered in 1961. It is now estimated that 60,000-65,000 new cars will be ordered in 1971. Not the 100,000-plus which railroads require each year—but close enough that the government might be encouraged to help close the gap.

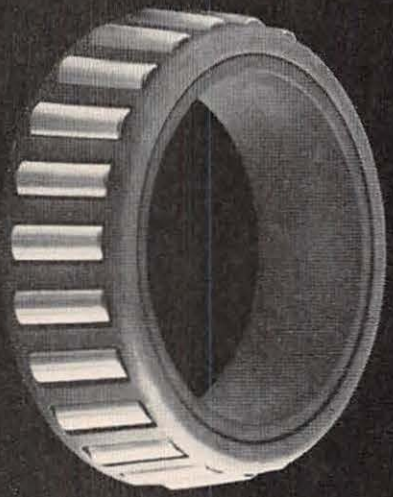
Nationalization is not the answer to the railroad problem. But those who keep putting the industry's worst foot forward sometimes make nationalization sound like the cheapest way out.

BART cars ride on Brenco Bearings.

BART, San Francisco Bay Area Transportation, is more than a rapid transit. It is a transportation system that will open up employment and educational opportunities to underprivileged communities by providing greater mobility for citizens of isolated areas. BART cars are the most advanced rapid transit cars in the world... light, high-speed, low-maintenance... built by Rohr Corporation with Rockwell trucks and using the most modern tapered roller bearings available today... BRENCO.

Brenco Incorporated, Petersburg, Virginia.

BRENCO Tapered Roller Bearings



BRENCO

RAILWAY AGE

FEBRUARY 8, 1971

NEWS

PASSENGERS	Metroliners pass a milestone	p. 8
	EL begins push-pull service	p. 8
	Volpe redraws the Railpax map	p. 12
	GE plans $14-million car-assembly facility	p. 14
FREIGHT CARS	1970 new-car orders fixed at 50,148	p. 16
	"CARS" wants more open-top cars	p. 8
FINANCIAL	Southern hikes its capital-spending budget	p. 13
	DOT sets terms for Penn Central guarantee	p. 16
	New status for freight forwarders?	p. 8
TRANSIT	Oil executive to head Transit Conference	p. 8
	Lindsay asks 200 new subway cars	p. 8
	$1 billion for transit aid in '71, '72	p. 8
	Transit proposals perk in St. Louis	p. 14
	Technical proposals sought for D.C. cars	p. 14
	Twin Cities area offers a transit proposal	p. 15

FEATURES

TRANSIT	35,000 ex-motorists say the Lindenwold Line is great	p. 17
ENGINEERING	Improved rail-test car used on Frisco	p. 20
	Chicago Transit Authority works with low M/W ratio	p. 32
	Yard, terminal improvements rank high in '71 programs	p. 38
SAFETY	Grade-crossing accidents drop	p. 29

COMMENT

INSIDE	Are railroads worth saving?	p. 5
LINES ON LABOR	Does labor really want nationalization?	p. 16
VIEWPOINT	What is the role of regulation?	p. 44
WATCHING WASHINGTON	Two transit bombshells	p. 14

DEPARTMENTS

Carloadings	p. 41	People in the News	p. 35
Market Outlook	p. 41	Transit Personnel	p. 35
New Products	p. 27	World Report	p. 48

Short and Significant

RAILROADS

METROLINERS PASS A MILESTONE

Penn Central's Metroliners have rolled into their third year of operation with an average occupancy rate of 65%, compared with the airlines' 50%. In their first two years, the Metroliners carried well over 2 million passengers on some 6,500 trips between New York and Washington.

"CARS" WANTS MORE OPEN-TOP CARS

The Construction Aggregate Rail Shippers (CARS) association has signed a contract with A. T. Kearney & Co., Inc., management consultants, to begin an in-depth study of railroad shipments of construction aggregates. Plagued by shortages of open-top cars that each year disrupt aggregate rail shipments, the producers hope to convince railroad managements that the carriers are losing out on what could be a profitable haul. In 1930, railroads handled 33% of the aggregates produced; in 1970 they handled only 88 million tons of the 1.7 billion tons produced.

NEW STATUS FOR FREIGHT FORWARDERS?

Reversing a previous stand, the ICC has decided to support legislation to permit freight forwarders and railroads to negotiate charges for transportation service. Historically, forwarders have been treated as shippers and have been required to pay the same charges applicable to all other shippers. The ICC's decision was served Jan. 25 in Ex Parte No. 266, Investigation into the Status of Freight Forwarders. The Commission proposed that the new status for forwarders be put on a three-year trial basis so that its effects could be studied.

PC TRIMS PAYMENT TO AAR

Penn Central is paying about $50,000 a month to the Association of American Railroads in dues, compared with the $120,000 monthly it paid prior to going into reorganization. The PC payment is limited to its share of the costs of AAR's Car Service Bureau, freight car location service and other interline matters. It does not cover public relations, advertising, or lobbying functions.

EL BEGINS PUSH-PULL SERVICE

Erie Lackawanna has introduced its first push-pull commuter trains on the Suffern and Boonton lines out of Hoboken, N.J. By midyear the State of New Jersey's $26-million program will have placed 105 new Pullman-Standard aluminum coaches and 23 General Electric U34CH locomotives (RA, Dec. 14, 1970, p. 22) on the two routes, replacing virtually all locomotives and overage cars. At introductory ceremonies John C. Kohl, commissioner of NJDOT, stressed that programs are now in "full stride on rehabilitation of New Jersey's transportation facilities" and noted that all the State's rail commuter operations have been experiencing substantial increases in traffic, even prior to introduction of new or rehabilitated cars.

TRANSIT

OIL EXECUTIVE TO HEAD TRANSIT CONFERENCE

Gulf Oil Chairman E. D. Brockett will head the Fifth International Conference on Urban Transportation to be held in Pittsburgh Sept. 8-10. The Pittsburgh Urban Transit Council will sponsor the conference, with Gulf Oil and the Transportation Research Institute of Carnegie-Mellon University as co-sponsors. Says Brockett: "Because we are involved in the business of moving people, I and the oil company I work for, believe we have a social responsibility to work for the best total transportation programs to benefit all, to keep our cities viable, to free people to move about, which I feel is one of our principal freedoms." The first Pittsburgh conference was held in 1966. The conference planned for 1970 was cancelled due to local bickering over the choice of a transit mode for Pittsburgh.

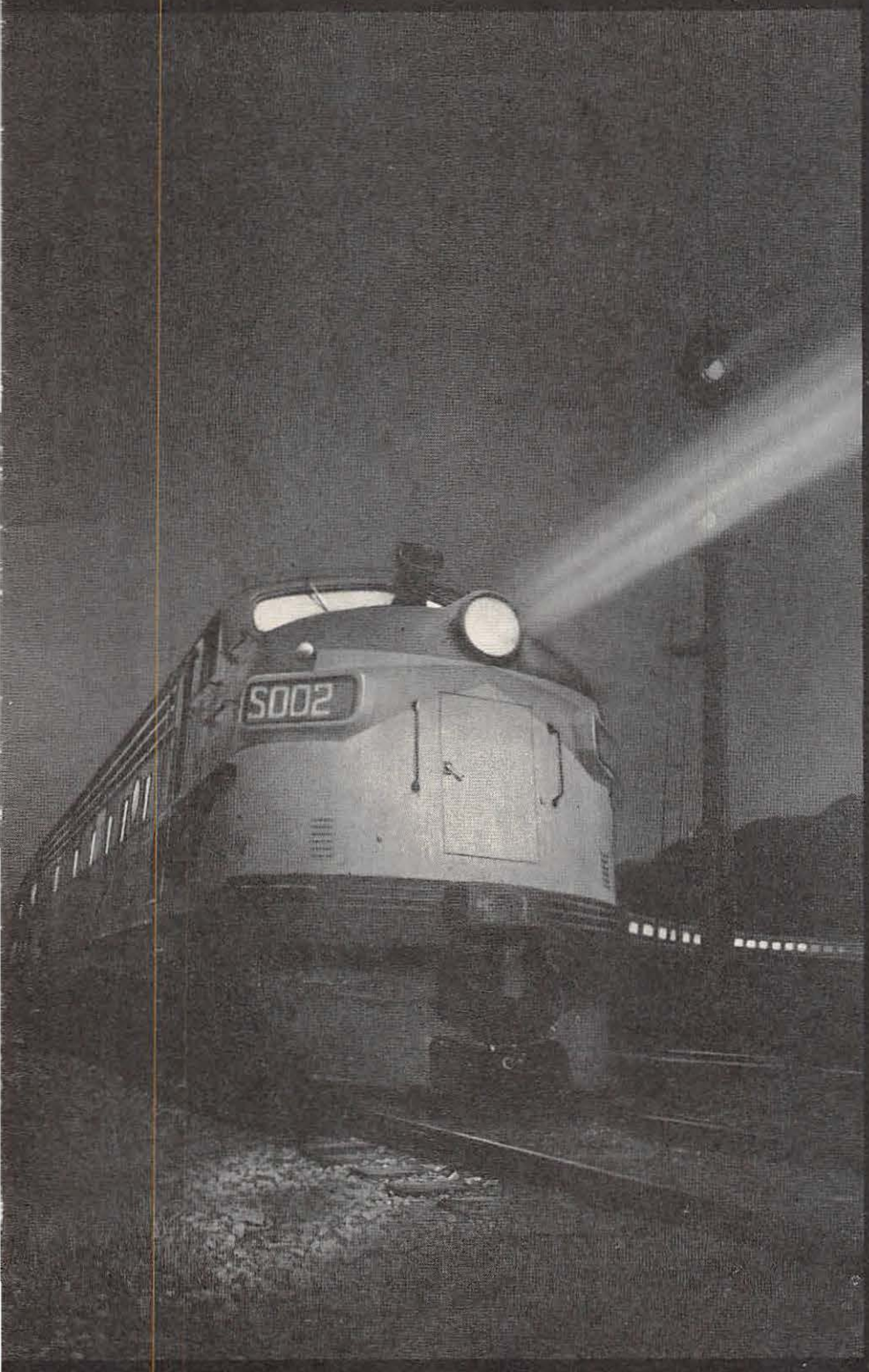
LINDSAY ASKS 200 NEW SUBWAY CARS

Mayor John Lindsay has proposed a $1.55-billion capital budget for New York City for fiscal 1971-72, including $235 million for transportation projects. Of this, $47 million would go for purchase of 200 new air-conditioned subway cars, $32 million for subway construction, and $49 million for highway projects, mostly repaving.

$1 BILLION FOR TRANSIT AID IN '71, '72

The White House plans to permit the obligation of a total of $1 billion in Federal transit-aid funds during fiscal 1971 and fiscal 1972. For fiscal '71, the Office of Management and Budget has set a $400-million ceiling (compared with $600 million authorized by Congress). For '72, obligations will total $600 million. The cash outlay will be $215.2 million in fiscal '71 and $327 million in fiscal '72.

Switch



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Todays giant diesels need the extra cranking power that Gould Diesel Batteries deliver. They are the most power-packed starting batteries ever made. Engineered to respond with an extra surge of power under the severest weather condition, Gould Diesel Starting Batteries never know when to die. They keep on cranking year after maintenance free year. High electrolyte level design keeps watering requirements at a minimum.

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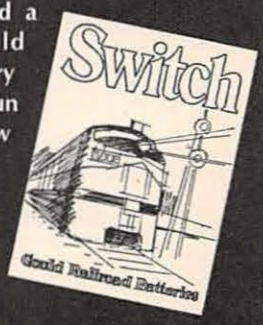
Gould Batteries are backed-up by our national service organization. You can be sure that there is a Gould sales/service office near you.

For absolute reliability in battery power, Switch to Gould Railroad Batteries. Write for more information and a free brochure. Gould Inc., Industrial Battery Division, 467 L Calhoun Street, Trenton, New Jersey 08607.



GOULD INC.

INDUSTRIAL BATTERY DIVISION

Motive Power Batteries • Railroad Batteries • Stationary Batteries • Chargers • Uninterrupted Power Systems

If I were running

The Commuter

...I'd do everything I could to keep the trains running on time. Among that everything, I'd include more automation, more electronics and more lightweight cars.

My brother-in-law lives in south Jersey, and rides the new Camden-Lindenwold line into Philadelphia. He says it's the closest thing to push-button railroading he's seen since he got his first Lionel back in '38. He says nobody in his block, not even the wives, ever drives downtown anymore, because the schedules are so convenient and the trains are so clean.

Speaking of cleanliness, I'd also like to see cleaner trains. I was in Chicago last week and rode one of the CTA's new stainless steel cars. If PATCO and CTA can put people on safe, clean, comfortable stainless steel trains, why can't this railroad?

What else? Oh yes, I'd make the timetables a little simpler and a little easier to read. The fine print and footnotes are okay for contracts, maybe, but not for timetables.

this railroad...

The Accountant

...I'd keep an eye on the little costs that snowball into big expenses.

For instance, do you have any idea how much it costs us to give a passenger car a bath? Or a new paint job? I'd get new stainless steel cars that don't show dirt and are so corrosion resistant that they never need paint.

Did you know that the price of power to roll an extra thousand pounds of car weight down the track adds up to hundreds of dollars over the lifetime of the car? So I'd do everything I could to trim the fat from my new rolling stock.

That's why I keep telling our management to get cars made out of nickel stainless steel. It's a real bargain. If I were running this railroad, I'd make it a stainless steel line.

INTERNATIONAL NICKEL

For more information on stainless steel passenger cars, write Department RA271, The International Nickel Company, Inc., One New York Plaza, N.Y., N.Y. 10004. In Canada, The International Nickel Company, Ltd., P.O. Box 44, Toronto-Dominion Centre, Toronto 111, Ontario.

Circle 6 on coupon page 27

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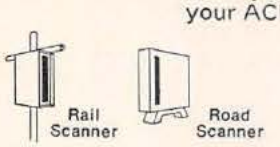

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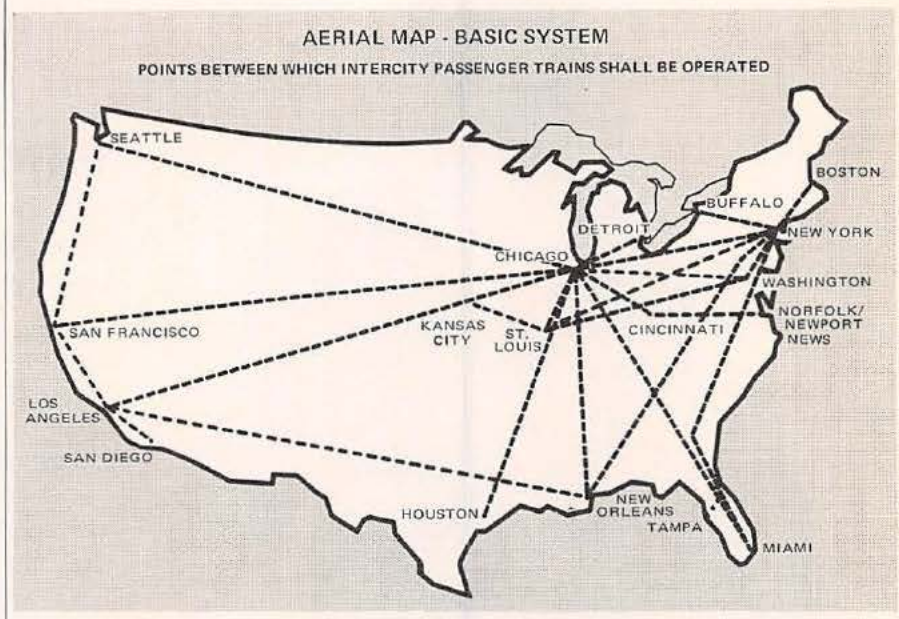
Circle 7 on Coupon Page 27

RAILWAY AGE NEWS



Volpe redraws the Railpax map

DOT Secretary John A. Volpe on Jan. 28 designated the basic system over which the National Railroad Passenger Corporation will operate intercity passenger trains after May 1.

To the 16 city-pairs laid down in the preliminary Railpax system he announced in November (RA, Dec. 14, p. 26), Volpe added five city-pairs and an extension. These were:

New Orleans to Los Angeles.

Seattle to San Diego.

New York to Kansas City.

Washington to Chicago.

Newport News/Norfolk to Cincinnati.

A spur from the earlier-named New York to Miami route to serve Tampa and St. Petersburg.

Earlier city-pairs designated by Volpe were: New York-Boston; New York-Washington; New York-Buffalo; New York-Miami; New York-New Orleans; New York-Chicago; Chicago-Detroit; Chicago-Cincinnati; Chicago-St. Louis; Chicago-Miami; Chicago-New Orleans; Washington-St. Louis; Chicago-Houston; Chicago-Seattle; Chicago-San Francisco; and Chicago-Los Angeles.

In each case, Volpe proposed a number of alternative routes between the end points. For example, New York-Boston could be via either Providence, R.I., or Springfield, Mass.

Volpe said he will also urge Railpax to consider service to Vancouver, B. C., Montreal, Que., and Loredo, Texas, the latter as a gateway to Mexico.

Secretary Volpe estimated that Railpax would break even in three years and make a profit thereafter.

He said Postmaster General Winton M. Blount had pledged to him "in writing" that the Postal Service would provide Railpax with additional revenue for carrying mail—estimated at about $10 million annually.

In his designation of the final route system, Secretary Volpe firmly denied bowing to political pressure over any route. And he resisted further immediate expansion by declaring, "If you put enough losers in, the corporation . . . would last about a year and then would be flat broke."

The final route plan "lays the foundation," the Secretary said, "for what in my opinion is destined to become the all time comeback in the history of American transportation."

The five added city-pairs removed at a stroke most criticism of the pre-

liminary plan. And inclusion of the West Coast and Sunset routes represented a signal victory for DOT/FRA over the White House office of Management and Budget which earlier vetoed their designation as city-pairs.

After May 1, the only regions of the country presumably to be without rail passenger service will be northern New England and a Deep South Jacksonville to New Orleans run.

Sen. Winston L. Prouty (R-Vt.), a principal author of the Railpax Act, said he was disappointed that there was no service between Boston and Montreal.

New York State officials said New York should take over intercity passenger service within the state since Railpax now contains only a New York-Albany-Buffalo route. State Attorney General Louis J. Lefkowitz said a state agency should be created, financed by the sale of bonds, to operate passenger trains between New York and Montreal, Chatham, and other points.

In other news, the eight Railpax incorporators elected David W. Kendall, a former Chrysler vice president-law and general counsel and assistant secretary of the Treasury from 1954 to 1955, as their chairman.

The incorporators, who have been meeting almost continuously since their Senate confirmation Dec. 30, also:

- Retained McKinsey & Co., a leading management consulting firm, to develop and initiate the organizational structure for the corporation and to provide interim staff support for planning.
- Engaged the Cleveland law firm Jones, Day, Cockley & Reavis, supported by other firms in New York, Washington, and Chicago, as their interim counsel. These firms will negotiate the individual contracts with railroads for assumption and operation of passenger service by Railpax.
- Selected the Philadelphia engineering consulting firm of Louis T. Klauder & Associates to inspect and survey available passenger cars and locomotives and passenger terminals. It will provide the incorporaters with information on which to base Railpax's initial capital investment.

Southern hikes capital spending

The Southern System has budgeted $130.3 million for capital improvements in 1971—a slight increase over 1970's $128.1-million investment. Of the total, $65.2 million will go for new freight cars and $18.8 million for locomotives. Other major capital projects include start of construction on a new yard at Sheffield, Ala.; extension of microwave from Danville, Ky., to St. Louis; and two CTC extensions.

In 1970, a larger amount, $81.8 million, was spent on freight cars. This was partly because aggregate cars valued at $7 million, originally programmed for 1971, were ordered in '70 to take advantage of attractive prices. Locomotive orders in '70 totaled $17.8 million.

Southern President W. Graham Claytor, Jr., announced the 1971 capital program at a New York meeting of security analysts. Claytor reported that the system's net income in 1970 was a record $55.8 million, a 21.3% increase over the $46 million reported for 1969. Net income before Federal taxes was $75.5 million, compared with $75.1 million in 1969. Federal income taxes dropped from $29.2 in 1969 to $19.7 million in 1970 due to the rapid amortization of freight equipment permitted in the Tax Reform Act.

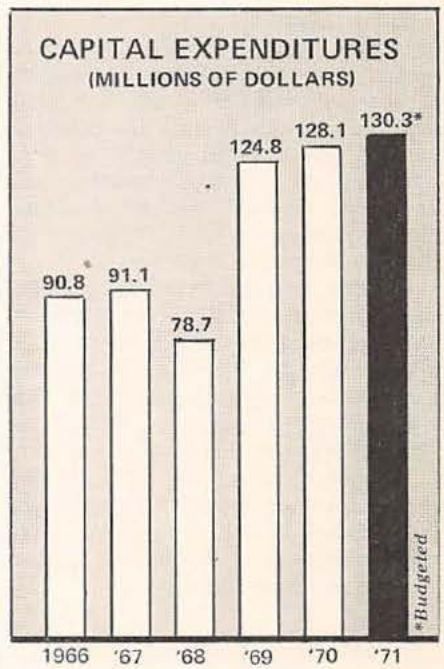
Southern's return on investment rose to 5.65% in 1970, from 5% in 1969. "This is totally inadequate still, though we are moving in the right direction," said Claytor.

Southern's TOFC revenue rose to $34 million in 1970 from $31.4 million the previous year, defying the industry trend. This was accomplished on a 2% increase in TOFC loadings; for the industry as a whole, TOFC loadings were down about 6.4%.

Southern was one of a number of railroads to issue full reports for the year 1970 early in the New Year.

Norfolk & Western Railway Co. reported a net profit of $71.2 million in 1970, compared with a net of $80.2 million in 1969.

Consolidated net for the N&W system, including Dereco and its wholly-owned subsidiaries, Erie Lackawanna and Delaware & Hudson, was $65.1 million, compared with $87.4 million in 1969. (Erie Lackawanna reported a net loss of $10.9 million in 1970, against a profit of $1.6 million in 1969. D&H earned $619,000 in 1970 compared with a profit of $3.5 million in 1969.)



SOUTHERN SYSTEM investments have risen steadily in last three years.

Seaboard Coast Line reported net income of $36,757,000 in 1970, compared with $33,187,000 in 1969 (before extra-ordinary income of $5,298,000 resulting from resettlement of prior years' freight revenues.)

Soo Line's net rose to $6,091,225 in 1970 from $5,562,699 in 1969.

Union Pacific Corp. and subsidiaries reported net income in 1970 of $120.7 million, an increase of $13.3 million over 1969.

Southern Pacific Co. and subsidiaries had a net profit in 1970 of $106,765,616 compared with $109,170,541 in 1969.

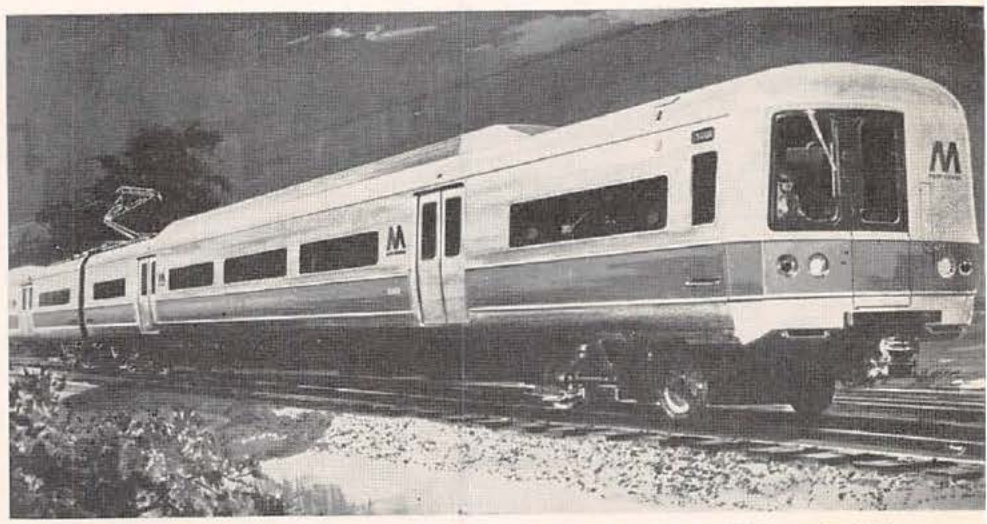
These reports are all on the basis of ICC accounting rules. Some railroad companies also report earnings on the basis of generally accepted accounting principles (GAAP), which requires the deduction of deferred taxes from net.

NEWS

GE plans $14-million car-assembly facility at Erie plant

General Electric, which won prime contracts in 1970 for 224 new commuter cars, is building a $14-million car-assembly facility at its Erie, Pa., plant. The program calls for construction of new facilities as well as modernization of an existing building, said Bryce W. Wyman, vice president and general manager of GE's Transportation Systems Business Division.

Wyman said the resulting 350,000-sq-ft complex will be "the most modern and advanced in the industry." Included will be areas for subsystems testing, total systems simulation and environmental testing. In addition, the Transit Systems Products Department will conduct full operational testing on the company's test track. Wyman noted that GE will be the first car builder to conduct such extensive tests on its own grounds prior to delivery.



FIRST OFF THE LINE at General Electric's new Erie facility will be 144 cars (artist's conception above) for service on Penn Central's New Haven Division. GE also has order for 80 Hudson and Harlem Division cars.

Transit plans perk in St. Louis

Rapid transit for St. Louis? The pot is boiling, and if studies are good ingredients, the ultimate dish should be a treat.

A Parsons Brinckerhoff engineering study begun nearly three years ago should be ready this May. It is expected to recommend an 82-mile "rail-like" system. It will be presented to the East-West Gateway Coordinating Council, a group of leading municipal officials originally set up to do the transportation job required by the Federal Highway Administration to qualify for matching funds. Chairman is St. Louis' Mayor Cervantes.

Hopefully, the Council will officially endorse the engineering study early this summer and establish a plan of action. This means fund raising. The ambitious long-range engineering recommendations are expected to require $1.25 billion to fulfill. Local funds in excess of $400 million must be raised to qualify for matching funds of $800 million from DOT's UMTA. Sources in addition to the city of St. Louis itself include the surrounding municipalities in Missouri, and across the Mississippi in Illinois, plus the two state governments. Transit supporters, and there are many, are in the wings ready to move onto stage. The Transportation Department of the Chamber of Commerce of Metropolitan St. Louis set up last August will work to coordinate the fund-raising activities.

A mini-study just okayed by UMTA and to cost $220,000 will examine the socio-economic implications of the proposed system. It will explain what St. Louis would be with and without the transit system in terms of employment and environment. It will also make an "additional evaluation" on how the populace looks at the proposal. The preliminary output should be available in four to five months.

After these preliminaries, a proposal will go to referendum, perhaps in mid-February. "If we could time the referendum right after one of our paralyzing snow storms," observes one St. Louis businessman, "it would be a pushover!"

If DOT approves the application for matching funds (and there is no reason to expect other than quick approval), and with all other prior steps cleared, the digging should start. Mark a date 18 months to two years from now.

That may be pretty close.

Technical proposals sought for D.C. cars

The Washington Metropolitan Area Transit Authority will accept unpriced technical design proposals for its first 300 cars—about half of its total planned fleet—until May 25. Price binds on the design adopted by WMATA will be due Oct. 1.

The D. C. Metro cars will be of aluminum or steel, electrically powered, with a maximum speed of 75 mph. Choice of air or hydraulic brakes is open. The air-conditioned vehicles, to be operated in pairs, will weigh about 70,000 pounds each. Sixty cars will be required by November 1973; 50 more by August 1974; an additional 50 by December 1974; and the remaining 140 by August 1975.

Documents are available at $50 a set. A pre-proposal conference will be held at WMATA offices, 950 South L'Enfant Plaza, S. W., Washington, on Feb. 23.

WMATA has also issued requests for technical proposals for design, fabrication, installation and maintenance of 91 escalators; and for engineering development of automatic fare collection equipment.

Twin Cities offers transit proposal

It may not be until sometime into the 1980s that the Minneapolis-St. Paul area will be needing a rapid-transit system. Nevertheless, the public transportation commission there wants local citizenry and the Minnesota legislature to be thinking along those lines right now. A detailed public transportation plan, with a "family of vehicles" concept as one of its key features, was expected to be delivered to the legislature (Urban Affairs Committee) last week. The Twin Cities Area Metropolitan Transit Commission, which presented the plan, hopes to see early legislative action on it as well as on short-range budgetary proposals for the existing public bus system.

The comprehensive family of vehicles concept leans heavily on bus service, but has rapid transit (probably, but not necessarily, rail) as its backbone. It has been estimated that, should a rail rapid-transit system be deemed necessary by 1985, the cost then of a 59-mile rail system would be about $1.4 billion.

Organization changes for Pullman Inc.

Pullman Inc. is reorganizing its transportation equipment divisions "in an effort to maximize the potential [of the divisions] in the intermodal movement of freight in the U.S. and abroad." With the changes, George L. Green becomes executive vice president, Transportation Equipment Divisions, Pullman Inc. T. A. Micali will be president of Trailmobile Division, and E. T. Ahnquist becomes president of Pullman-Standard Division. Also reporting to Green will be Pullman Transport Leasing, TRAILOR of France, Canadian Trailmobile Limited and Trailmobile de Mexico. With the new organization, says S. B. Casey, Jr., president and chief executive officer of Pullman Inc., "We will be in a position to better help solve mutual problems and create opportunities for total transportation . . . ."

Watching Washington

REID BEDDOW

SURPRISE, SURPRISE

President Nixon's proposed 1972 budget contains two bombshells with respect to transit. Surprise number one is the effect the vaunted revenue sharing plan would have on the Urban Mass Transportation Act of 1970, which was universally declared to inaugurate Year One of the Transit Age by providing $10 billion over the next 12 years for local transit improvements. According to the plan, the mass transit grant program after Jan. 1, 1972, along with current ongoing programs for all Federal-aid highways other than interstate highways (yes, that's what the President said—a $1.4 billion diversion from the Highway Trust Fund), plus airports, state and community highway safety, and highway beautification will combine into a special revenue sharing transportation fund totaling $2.6 billion in budget authority ($1.9 billion in actual outlay). State and local governments would determine the allocation of these funds to achieve a "balanced transportation system" presumably paying some regard to the funds' original purpose. The funds, thus released, would not require local or state matching grants. UMTA would be left with research, development, and demonstration projects. Funding for the Interstate Highway System would be maintained at the Federal level as before. Needless to say, the President's revenue sharing proposal faces an uncertain—very uncertain—future. The Administration itself is said to feel that the plan has little or no chance to escape being flattened by the highway-lobby steamroller.

The other transit bombshell (more of a firecracker, perhaps, after the above) is that the budget further reduces the amount of obligation authority transit men had expected from UMTA during fiscal years 1971 and 1972. For the two years UMTA will obligate transit-aid funds as follows (in thousands, with a comparison to FY 1970):

Activity	1970	1971	1972
Grants and Contracts			
Capital Facilities	132,675	284,700	497,000
Technical Studies	8,030	15,000	25,000
Research, Development, and Demonstrations ..	16,325	40,300	75,000
University Research	3,007	3,000	3,000
Capital Loans	—	57,000	—
	160,037	400,000	600,000

Late last year, there had been predictions, some of them emanating from UMTA, that the agency would obligate $3.1 billion in fiscal '71. This later was revised downward to more than $800 million. Congress authorized $600 million. Now it is $400 million, and a disappointment.

NEWS

Lines on Labor

GUS WELTY

LABOR WANTS NATIONALIZATION?

Labor is the source of much of the talk about railroad nationalization these days, and that is not surprising. Labor has played the advocate before, when its problems with management have been severe. The frightening thing today—and it is frightening—is that the over-all state of the industry may (1) give labor a bigger audience, and (2) lead an influential part of that audience into panic-thinking. Of course, those in labor who suggest nationalization have made no study of the possible effects. Their comments seem to come right off the top—which is rather appalling, in view of the drastic things they are proposing. But there is always that danger that these comments will be taken seriously.

IF YOU THINK MUCH ABOUT IT, YOU HAVE TO WONDER WHY

If this danger were not present, the situation could come close to qualifying as black comedy—because the employee in his organization stands to be among the big losers in nationalization. As a long-time government-type and first Secretary of Transportation, Illinois Central President Alan S. Boyd would seem to be uniquely qualified to talk about such things. And Boyd, backed up by a poll of his IC staff, sees a number of things happening to the employee of a nationalized railroad. First, he would join the large (and growing) group of government employees. He would quickly come under the scope of government employment conditions, leaving behind what he knows today. He would be "leveled-out" as rail employment became comparable to other government employment. He would have no *more* freedom to strike, and might well have less. What about the rail union? As Boyd sees it, the union would have more confrontations with the lawmakers. It would tend to be more vulnerable to its own past practices. It would find itself more and more involved with the legalistic procedures which today's union leaders profess to hate. It would have no *more* freedom to call a strike, and might well have less.

THERE'S NEED FOR A SECOND LOOK

One of Boyd's primary concerns is that the rail crisis (and nationalization) may be considered only in the light of the labor problem. One of labor's concerns ought to be the same. In the meantime, labor—its leaders and its dues-payers—should be giving a lot more study to the effects of nationalization than, obviously, has been given thus far. As Boyd points out, there would be some winners in nationalization—bondholders, stockholders, below-the-top management, suppliers. There would also be losers—top management, shippers, local government, the taxpayers. And rail unions. And rail employees.

1970 new-car orders fixed at 50,148

As late as December, railroad supply sources were estimating that no more than 40,000 new freight cars would be ordered in 1970. Early in 1971, the estimate was upped to 48,000. Even that was conservative. Figures just made available show that 9,031 new cars were ordered in December, bringing the year's total to 50,148. In addition, 8,053 rebuilds were ordered during the year. As of Jan. 1, 1971, the backlog of new cars on order and undelivered was 27,558, compared with 23,644 on Dec. 1, 1970.

Of the 42,385 cars ordered in 1970, 42,385 were to be built by commercial carbuilders.

Terms set by DOT for PC guarantee

In agreeing to guarantee Penn Central trustee certificates in the amount of $100 million—in accordance with the Emergency Rail Services Act of 1970—the U. S. Department of Transportation found that PC "can reasonably be expected to become self-sustaining." But the terms of the Federal guarantee, as disclosed in Penn Central's prospectus, assume that the worst could happen.

One of the conditions of the guarantee is that "in the event of actual or threatened cessation of essential transportation services by Penn Central, the Secretary of Transportation shall have the option to procure by purchase or lease trackage rights over the lines of Penn Central and such equipment as may be necessary to provide such services. . . ."

Other conditions provide that within 30 days of execution of the guarantee agreement, the railroad's trustees will submit to DOT plans for (1) "the sale of non-transportation assets of Penn Central and its corporate subsidiaries (including but not limited to security holdings)"; and (2) "the abandonment of lines of railroad of Penn Central which are uneconomical and, in their judgment, not required by the public interest."

LINDENWOLD SUCCESS STORY

PATCO plans its next phase

Ridership rises and a maze of technical advances pay off for bustling South Jersey transit line

By **FRED N. HOUSER**, Mechanical Editor

That "it will be a cold day when that line starts operating" has probably been observed about all too many transit projects. However, that is exactly the way it was on Feb. 15, 1969, when the brand-new 14.5-mile Lindenwold high-speed line first opened its station and car doors to riders of suburban New Jersey southeast of Philadelphia.

All 75 of its cars were new—the first generation of such high-performance transit equipment and all built without benefit of prototype. All of the fixed plant was new or substantially modified. All the employees were new. Most important, all the customers would have to be new, too.

"Port Authority Transit Corporation admits to operating the finest transit service in the World," says Richard E. Pinkham, general manager. "While others have talked and planned, and some are building, the Delaware River Port Authority has built—and its wholly owned subsidiary is operating—a 14.5-mile line that features high performance, the ultimate in passenger comfort, and the most advanced labor saving practices yet put into practical everyday use."

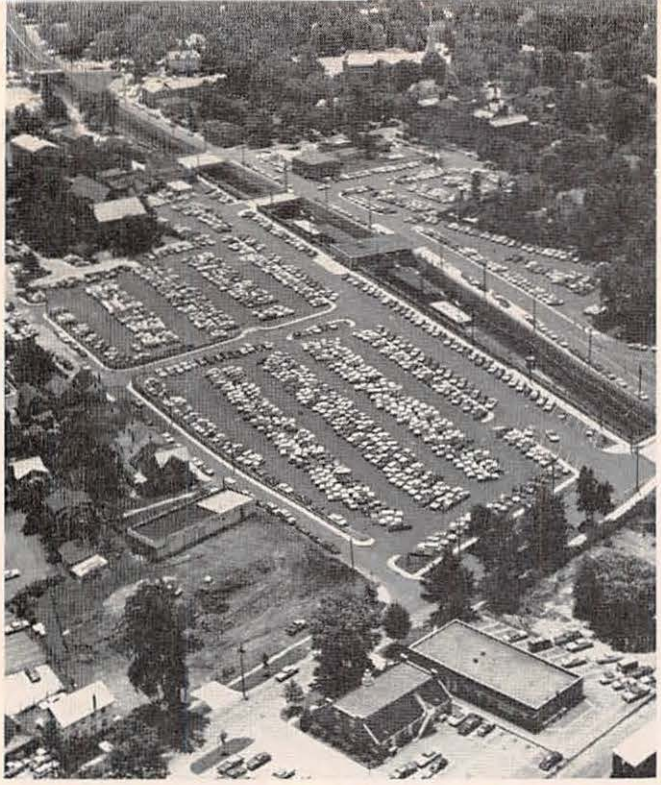
From 6.1 million riders in 1969, PATCO's patronage went to 8.6 million in 1970. PATCO experienced continuous growth throughout 1970. From an average ridership in January of 29,500, the number grew to a steady 30,000 from March through September, with virtually no drop during the summer months. A 10% increase to 33,000 was recorded by October, due in large part to the opening in the previous month of 2,300 additional parking spaces. By December, ridership was averaging 35,000.

● **Full house.** PATCO cars have been operating at maximum capacity during peak commuting hours since the fall of 1969. Pinkham points out that 70 of the line's 75 cars are in service 99% of the time at the peaks. PATCO estimates that 1971 will see an average of 36,000 weekday riders and forecasts that more than 10 million passengers will be handled this year.

It was almost literally a football "point after" that scored PATCO's one-day ridership record of 37,325 on Nov. 23, 1970. The Philadelphia Eagles played that week's Monday night professional football game, attracting several thousand extra riders who began moving into Philadelphia right on the heels of the outbound evening rush. This influx was handled with little difficulty. What concerns PATCO's managers is a further intensification of the inbound and outbound peaks.

"Our peaks are more severe than those of normal transit operations," explains Pinkham. In less than 30 minutes, starting just before 5 p.m., some 7,000 passengers are loaded in Philadelphia, half of the rush riders. In November, crossover tracks were installed west of the Lindenwold Stations, making it possible to reduce the roundtrip time for a set of equipment from 60 to 56 minutes. This saving has been equivalent to adding another train to PATCO's schedules. The average headway of 4 to 5 minutes during rush drops to as low as 2 minutes for one interval. Normally 70 of the 75 cars are in service during both peaks.

● **Meeting the demands.** "Our shop people have an amazing ability for quick repairs," says Pinkham proudly. He adds that the highly sophisticated car equipment does require considerable work, not because of any deficien-



FULL HOUSE in Haddonfield parking lot symbolizes success of PATCO's park-and-ride concepts. Still to be developed is real bus feeder system for the new transit corridor.

UNATTENDED STATIONS feature bill changers, automatic ticket venders, electronic gates, call-for-aid phones and constant television surveillance, along with police patrols.

cies in Budd's design but due to the demands placed upon it.

For instance, all trains are scheduled over the 3.2 miles between Haddonfield and Ashland in 3 minutes, an average of 66 mph, which is unheard of in other transit operations. This requires top acceleration and braking from the 75-mph cars. Their ATO (automatic train operation) equipment must be precisely adjusted to assure the stopping of a six-car train on a six-car-long platform within a tolerance of only plus or minus 20 feet.

● **Automatic operation.** Automatic train control (ATC) is provided through WABCO continuous coded cab signals. Each block is coded for the maximum authorized speed—zero, 30, 40 or 75 mph. ATO is provided by the General Electric propulsion system interfacing with the WABCO ATC. The ATO's primary function of automatically stopping a train at the center of each station platform is triggered by an inductive coil 1,200 feet in advance of a station on the 75 mph track. This starts the train decelerating at its maximum rate, reaching 3 mph per second in the lower speed ranges.

Performance is definitely superior with ATO, according to PATCO's general manager. Trains require 1.5 minutes longer for the 14.5 mile run when operated manually. ATO accelerates the train away from the station as the attendant closes the doors. There is no delay "notching up." More importantly, ATO maintains full speed until the last instant, then brakes at the maximum rate.

PATCO trains are arranged for either ATO or manual operation, something which Pinkham finds valuable in the event of malfunction of either onboard or wayside equipment. He notes that the operator can then revert to manual operation with cab signals and speed control protection. This has often been important in assuring train service over the line, even if somewhat slower than normal.

Regular trains are scheduled for 22 minutes over the 14.5-mile route, including nine intermediate stops and speed restrictions in the original Camden and Philadelphia subways and over the Benjamin Franklin suspension bridge. Skip-stop expresses make the run in as little as 19 minutes. These timings mean averages of 40 and 46 mph respectively.

"While speed is the most important factor in attracting transit patrons," says Pinkham, "numerous other factors are involved in the potential user's decision." He spells them out:

—Convenient station access (PATCO's seven suburban stations are near important highways and have almost 8,000 parking spaces, many free);

—Attractive stations (all are fully air conditioned and passengers on platforms can be completely sheltered);

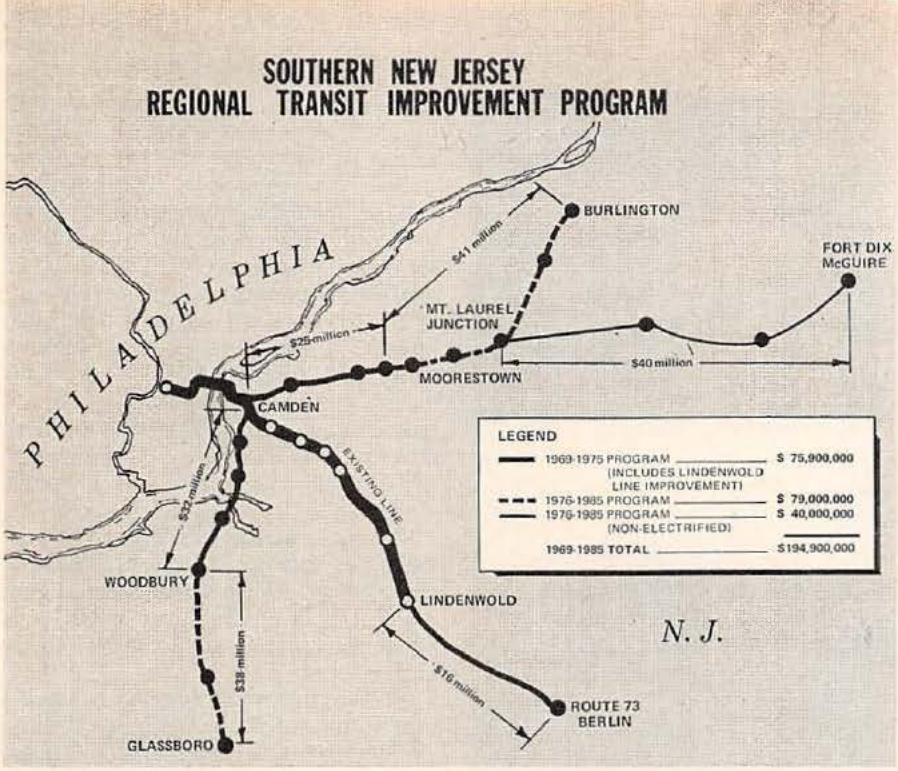
—Comfortable cars (all are air conditioned, have high-back transverse seats and are not arranged to maximize standee loads).

While stations have no attendants, passengers are under constant TV surveillance and have call-for-aid telephones which enable them to report difficulties. From Center Tower at Camden, the monitor can request additional fare or instruct the rider on proper handling of his ticket. In addition to his duties in assisting passengers the monitor also assures the security of the stations. All fare collection equipment is within view of the TV cameras. He also has a public address system with speakers in every station fare-control area and on every station platform. PATCO has its own police force and there are "hot lines" to local police.

Along with the monitoring function, the Center Tower contains the CTC board and supervisory control panel for the power system. While such features are part of other transit properties, the combining of the various control devices under one roof gives the train dispatcher, power director and television monitor a complete picture of what is happening on the line and provides a means of adequately controlling the operation.

● **One-man operation.** An important criterion of PATCO's design was to minimize direct operating labor. Trains of any length have one-man crews. The automated fare collection system was designed to eliminate station cashiers and to relieve all employees from handling money. In short, as Pinkham has described it, "everything was done to make the system attractive to potential users, as well as economical to operate."

PATCO came after Illinois Central in introducing the Advance Data Systems magnetically encoded ticket system. While it has had little difficulty with the tickets and electronic gates, most of the problems arose with the auxiliary equipment. What PATCO has



THREE-PRONGED EXPANSION is planned with preliminary cost estimates already prepared by PATCO staff. DRPA will be seeking UMTA funding for both near-term and long-term building of extensions projected 15 years ago.

found, according to Pinkham, is that standards developed for the vending industry over the past quarter century are wholly inadequate for the needs of the transit industry. A bill changer at a PATCO station is operated as many times during one rush hour as the same unit would be in a week in a coin-operated laundry. Ticket venders have not had the speed to meet the demands of peak-period passengers. "No one has ever built a cigarette machine that had to sell 400 packs in one hour," says Pinkham. Yet that is the rate that PATCO's ticket venders must operate.

While the advantages of automatic fare collection are so overwhelming that there is no possibility of reverting to a manned system, Pinkham feels there is real need for more research and development in the field.

● **Merchandising the service.** While the performance, convenience and comfort of PATCO would undoubtedly have assured steady growth in ridership, the line's management has backed this up with an advertising budget that ran to $160,000 in 1970—3% of the gross. This is about three times higher than that of any other transit operator. It was intended that professionally handled advertising would speed the growth of patronage, enabling PATCO to achieve its goal of covering operating expenses from the "fare box" as soon as possible.

TV, radio, billboards, and the metropolitan and neighborhood newspapers were used. As rush-hour ridership approached the capacity of the line, the advertising was then directed at the shopper and those riders who would be attracted to sporting and cultural events. This culminated in the movement of a special party in formal clothes to the Autumn Harvest Ball in a downtown Philadelphia hotel—an event which made the society pages. Few American transit lines can claim such social acceptance.

In establishing fares, Pinkham points out that "PATCO sells time; and not at a discount." Its fares are comparable with competing bus services. An important phase of the pricing has been the availability of parking. The original 4,400 spaces were arranged to be approximately 67% free and 33% pay (with coin operated gates or meters). Emphasis on pay parking in subsequent expansions has resulted in today's 8,000 spaces being about half pay and half free.

As part of the drive to encourage off-peak riding, gates are now arranged to permit free parking after 10 a.m. The all-day commuter continues to pay to park; the shopper can park free. When this system was introduced, there was an increase of 10% in off-peak riders. As more parking has been made available, there has been an increase in ridership. Pinkham notes that peak loads average 90 passengers per car—meaning 10 to 20 standees which contrasts rather dramatically with other transit operations where seated loads represent far smaller proportion. While 70 cars are needed for the afternoon peak, only a dozen are needed for mid-day service with double seats for many of the riders.

Pinkham points to the well-filled parking lots, calling them "positive proof that the engineers that designed PATCO and the staff that operate it are providing a service that is saleable in today's market. The clamor for extensions comes from nearly every community not now served."

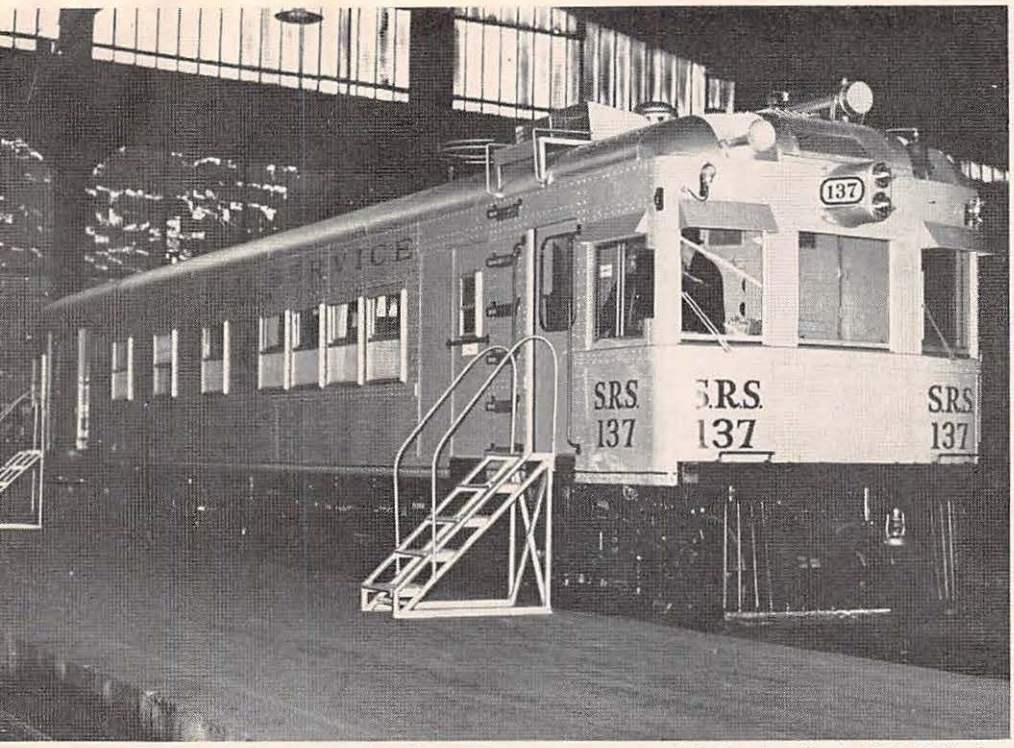
● **Where to next?** Since the Lindenwold Line has demonstrably relieved highway congestion in its corridor, the Delaware River Port Authority is now taking a new, hard look at the three-leg system which its consultant developed in 1956. In an effort to better forecast traffic on these extensions and to develop more information on those factors that induce South Jerseyans to use transit, DRPA has commissioned a study backed by a $750,000 UMTA grant. This study, expected to be completed this year, will be the basis for the application for UMTA funding for capital improvements which is soon to be made.

"The Federal government has now recognized its role in providing high quality transit which diverts motorists from highways," says a DRPA spokesman. The Authority is not prepared again to fund in excess of $90 million which it did to build to Lindenwold.

Although but one line was built rather than the three originally proposed, and the crossing of the Delaware River is made on the Franklin Bridge, rather than in the under-river tube originally proposed, the basic qualities of very high train performance and a high standard of passenger comfort and convenience certainly have been achieved. Lindenwold has become a success that it will be difficult to match. ■

CENTRAL TOWER

Camden control center has WABCO CTC and power boards (left) as well as station TV monitors (right).



LATEST AND MOST ADVANCED CAR in the Sperry Rail Service fleet, SRS 137, features, among other things, completely modernized crew living quarters.

PLAQUE commemorating 40 years of rail testing on Frisco by Sperry Rail Service is presented to Richard C. Grayson (right), Frisco president, by Eugene G. Swartz, senior vice president, Automation Industries, Inc., which is the parent company of SRS.

Improved rail-test car used on Frisco

Road gets Sperry plaque for long relationship.

Plaque-presentation ceremonies can mean a little or they can have a great deal of significance. One that took place at St. Louis recently falls in the latter category.

In this ceremony, Richard C. Grayson, president of Frisco, was on the receiving end of a plaque presented by Eugene G. Swartz, senior vice president, Automation Industries, Inc., parent company of Sperry Rail Service.

● **Forty years on the Frisco.** This ceremony had two things going for it. For one, it commemorated 40 years of rail testing on the Frisco by Sperry Rail Service. For another, it marked the introduction of a new, improved test car, SRS 137, which was to make its inaugural run over Frisco, thereby continuing that road's long-standing program of rail inspection aimed at detection of internal flaws.

Over the years Sperry has been active in developing improvements for its test cars, which now use two methods for detecting internal defects in rails. In one, electric current is sent into the rail to create an electro-magnetic field. Any defects in the rails, such as internal flaws, will cause changes in the field pattern, which will be noted by an operator monitoring a tape printout. The other method makes use of ultrasonics for detecting such defects as bolt-hole cracks.

The new car features all the recently developed and improved Sperry detection systems. Other features are a new design for the recording room and completely modernized crew living quarters.

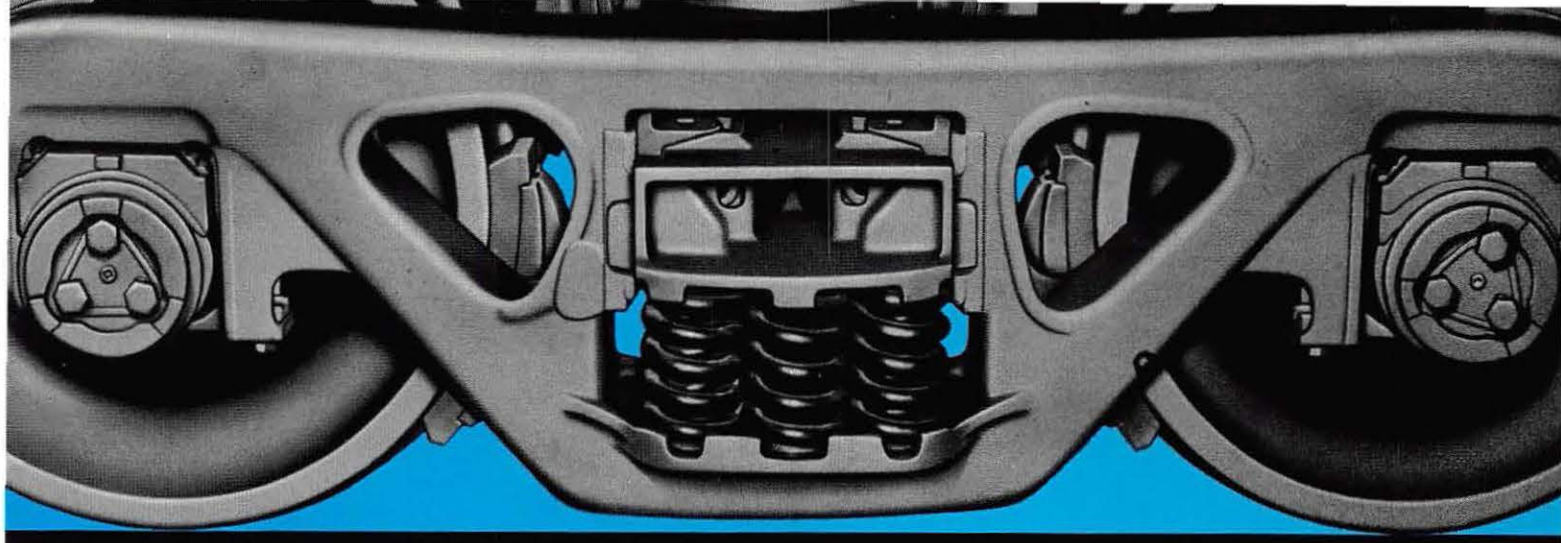
● **Special control system.** A significant feature of Car 137 is called Automatic Current Control. Previous magnetizing power systems, based on manually controlled high current and very-low-voltage DC generators, did not lend themselves to the rapid changes and dynamic ranges considered desirable. Automatic Current Control, say Sperry people, eliminates the need for constant adjusting of manual controls to compensate for varying rail surface conditions encountered.

The new control system involves a 3-phase, 400-cycle alternator driven by a diesel engine. The alternating current, fed to a low-voltage, high-current transformer, is converted to full-wave dc by means of silicon rectifier assemblies. Outputs are monitored and regulated by a special form of direct-current transformer.

● **Near-perfect rail contact.** In connection with the new system, a portion of the current used to create an electro-magnetic field in the rail is conveyed to the rail by means of a commutator and brushes attached to the hub area of the rear wheels of the forward truck. The company says the weight of the truck insures almost perfect, albeit pinpoint, contact with the rail without requiring the large areas of contact that conventional brushes required. Eventually, it is noted, all rail current will be conveyed to the rails via the wheels.

It is also explained that there is an ideal strength that should be maintained for the electro-magnetic field created in the rails during the testing procedure, and that the Automatic Current Control system provides instant control of any variances.

The latest improvements in the Sperry rail-flaw detection system "represent another step toward automation and the reduction of dependency on the human element," says Sperry. ■



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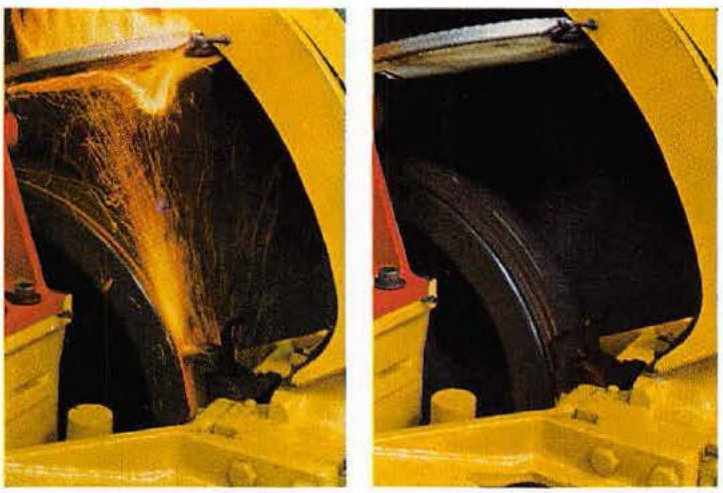
ABEX ANNOUNCES THE NEW SAMSON SHOE.

A revolutionary concept in metal brake shoe technology designed to upgrade braking standards throughout the country.

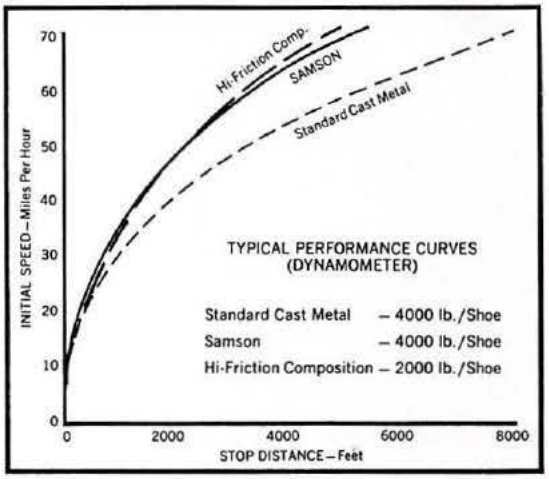
The Samson Shoe does not burn, or spark excessively.

These unretouched photos compare sparking of a standard metal brake shoe (left) and our new Samson Shoe (right) during a 100 mph emergency stop under extreme braking conditions. Tests were conducted on the world's largest double-ended dynamometer at our research center.



These unretouched photos compare sparking resulting from braking on long, steep grades. The standard metal brake shoe (left) after approximately seven minutes on our dynamometer. At right, the Samson Shoe after 60-minutes of the same test.

The Samson Shoe provides improved train control.



Today's heavier, faster freight trains are harder to slow down and stop.

Above chart shows typical performance curves of stop distance versus initial speed for Samson, standard metal, and composition shoes. The curves shown for Samson and Composition Shoes illustrate how braking performance can be upgraded on mix-consist trains throughout the country by replacing standard metal shoes with Samson Shoes. Dynamometer tests show the Samson Shoe will reduce stop distances approximately 30% at speeds of 40 mph or greater. Actual stop-distance tests conducted on a western railroad, showed the Samson Shoe shortened stop distances 32% with fully loaded coal trains on a 1% descending grade.

The Samson Shoe offers increased life.

BRAKE SHOE CHANGE-OUTS	Std. Cast Metal	SAMSON
Average Cars in Consist	75	79
Average Tons/Oper. Brake	115	115
Average Number of Shoes Changed Per Round Trip	207	98

Above chart shows a two to one life advantage of Samson Shoes over standard metal shoes on a full-train test conducted by a leading railroad. Figures show actual shoe consumption, per trip, obtained from more than ten round trips on a western railroad unit coal train.

The new Samson Shoe offers a variety of performance advantages, any or all of which might be a major solution to problems you are facing on your railroad today. We invite you to field test the Samson Shoe on your equipment. Contact your local Abex representative for details.

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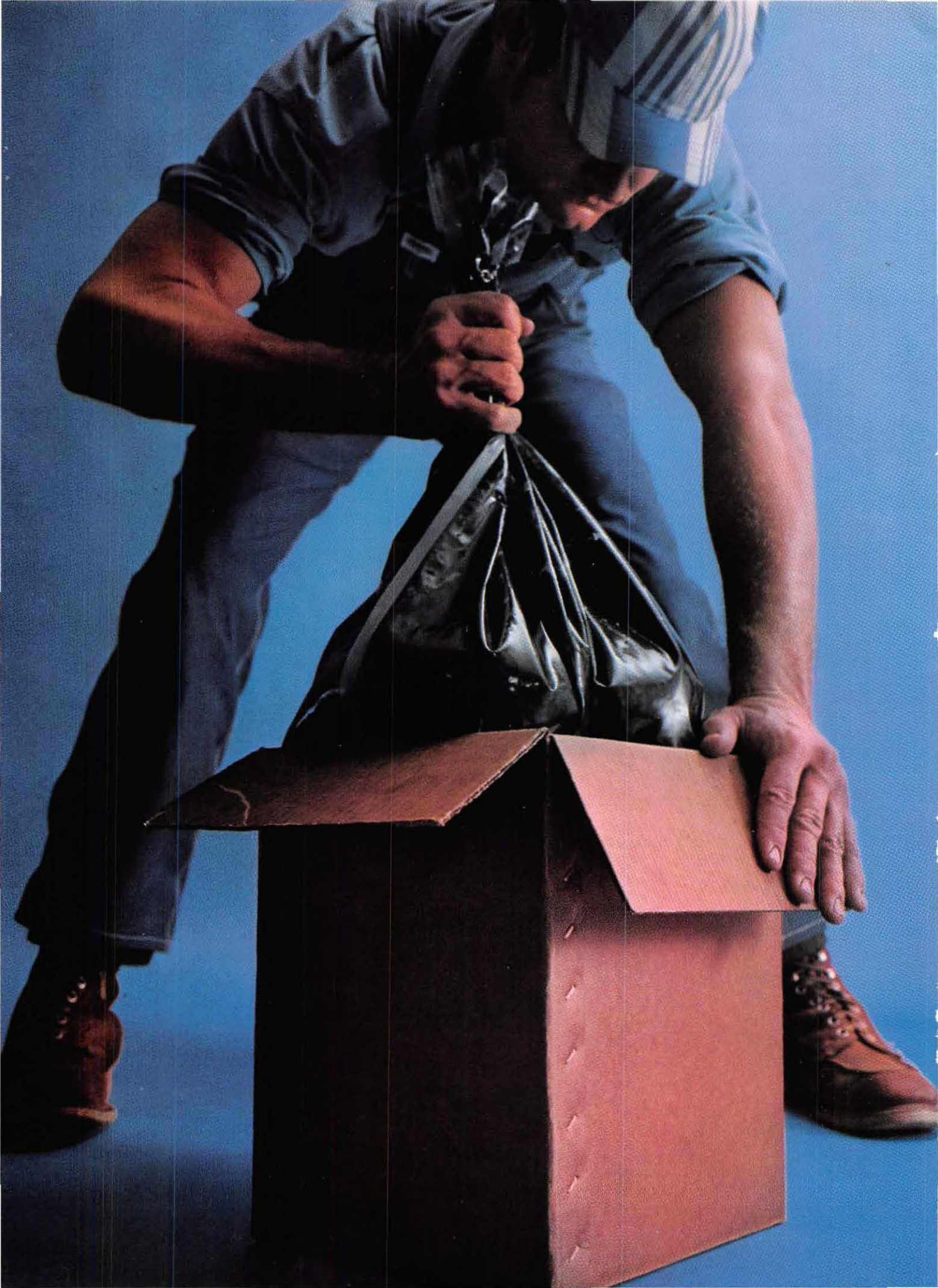

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Saves 7 ways.

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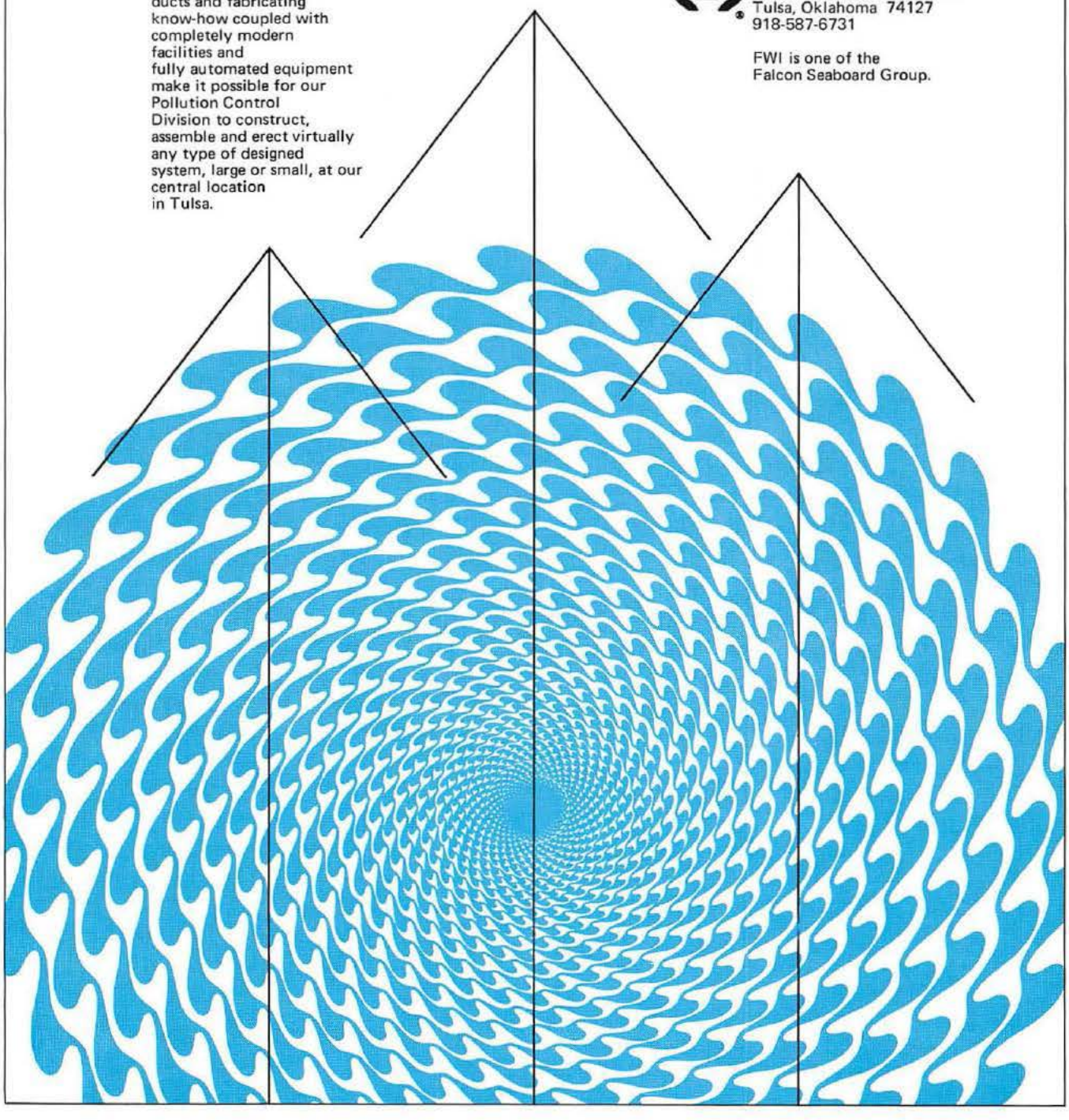


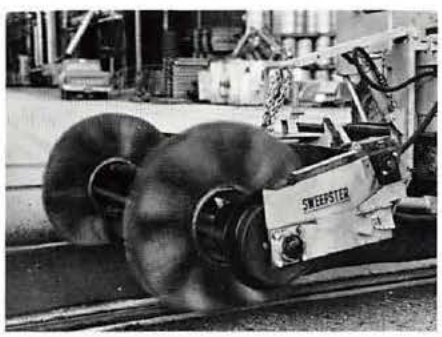
New Products Report

Cross grinder (RA-1)

A lightweight rail grinder for removing overflow metal at rail joints has been developed. Designated Model JG-970, it has two grinding wheels, one for each rail, thus eliminating the shifting and repositioning that would otherwise be necessary.

The grinding wheels are at each end of a metal boom, balanced at the center, and move like a teeter-totter, up and down, keeping one wheel up and clear while the other is down and working.

Power is supplied by a single 6-hp gasoline engine, mounted on the center of the beam and driving the grinding wheels by adjustable V-belts. Two slip-proof, foot-clamping devices, one for each side, support the working mechanism, anchoring and squaring the equipment firmly against the rail during slotting operations. Weight is 230 lb, about 100 lb lighter than the model it replaces. *Railway Track-Work Co.*



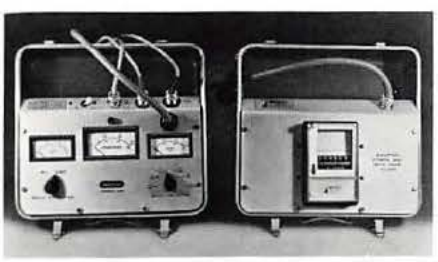
Flangeway sweeper (RA-2)

One of the problems that Dow Chemical Co. has in maintaining its network of tracks at its giant plant at Midland, Mich., is keeping the rail flangeways cleaned out at the many in-plant road crossings. These become clogged with the build-up of dirt, snow, ice and other materials which result in a high labor cost for digging them out with picks and shovels to prevent car derailments.

Last fall the problem was solved with the development of a special rotary brush attachment that was mounted on a Whiting Model 2TM Trackmobile. The bristles of the brush are located on each side over the flangeway and the rotor is powered by a power take-off on the Trackmobile. Since being put in service, pick-and-shovel work has been practically eliminated. To broaden the sweeper's use, Dow plans to fill the sweeper brush with more bristles so as to sweep snow away at switches. *Sweepster, Inc.*

Sterilant applicator (RA-3)

A convenient hand shaker has been made available for applying the new soil sterilant Tandex. It is designated for spot treatment of non-crop areas to control weeds, brush, brambles and woody plants that persist in growing where they are inaccessible to mowers. Such areas include the edges of buildings, machinery sites, utility poles, property lines and service roads. *Niagara Chemical Division, FMC Corp.*



Power recorder (RA-4)

A portable strip-chart recorder to give a continuous, permanent record of the horsepower produced by a diesel-electric locomotive is designed to plug

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into a cab-mounted permanent or portable Power-finder. The data can be used in determining when an overhaul is due and to detect transition or overloading problems. The Recorder, proving a permanent record of the power developed by the locomotive at its traction motors under over-the-road conditions, requires no supervision or attendant. Once necessary information is acquired on pressure-sensitive tape, the Recorder can be transferred to another locomotive. The shock-proof case is 13- x 13- x 4-in. and the unit weights 8 lb. Accuracy is within 2% and response is 0.8 sec. full scale. A single roll of chart paper will operate 756 hr. *Audn Corp.*

Battery charger (RA-5)

The TC charger is a transistor regulated, constant voltage, filtered, and current limited battery charger, using silicon diodes for rectification and power silicon transistors for control. A current limiting circuit allows a completely discharged battery to be charged at a constant current, while limiting the current to a safe value in case of severe overload or short circuit. The charger is protected against input and output transients by selenium surge suppressors and does not generate radio frequency interference.

The TC charger can also be used as a battery eliminator, with no modifications required. AC input is 120/240 volts, 1 phase, 60 Hz. DC output is 6 volts, 12 volts, 24 volts, or 48 volts various currents up to 12 amperes. *Power Conversion Products Inc.*

Bearing grease (RA-6)

A grease for lubricating locomotive journal roller bearings, Texaco Locomotive RB Grease, has been developed for large, heavily loaded bearings and to combat the peening of thin pieces of metal from the races under severe conditions. The compound is a buttery, lithium-base material which is dark green in color and contains a special combination of rust, oxidation and extreme pressure (EP) additives. The EP additive performs under shock loading conditions without film breakdown. *Texaco Inc.*

Computer terminal (RA-7)

The Novar 5-41 is an on-line conversational terminal, which can be interfaced with all third-generation computers compatible with Selectric teletypes. Parity error generation and transmission is a standard feature. When a parity error is detected, it does not lock the keyboard. A two character buffer provides a temporary storage of data, thus preventing a loss of synchronization and/or keyboard lock-ups.

A built-in modem is available. Unattended operation of the terminal is available when used with automatic answer Data-phone or DAA. *Novar Corp.*

Remote control system (RA-8)

The GENERAIL system for remotely controlling the operation of power switches, warehouse doors, grade crossing signals and gates—or any other device requiring two-position control—consists of a portable transmitter, a wayside receiving coil, and a control module.

When the operator presses his transmitter rocker switch to normal, the transmitter sends a 92-KH_Z signal. When he presses the rocker switch to reverse, the transmitter sends a 110 KH_Z signal. Because of its limited power and range, no FCC or other licensing is required. Transmitter range is purposely limited to 12 ft and it transmits directionally down.

The epoxy-encapsulated wayside receiving coil can be located anywhere up to 400 ft ahead of the equipment to be operated. Up to four coils can be used for one device. The control module contains solid-state circuitry. Output is a nominal 150-millisecond contact closure for each command. Contacts are rated at 5 amp., 115 volts AC. *General Railway Signal Co.*

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Grade-crossing accidents drop

Although fatalities from rail-highway grade-crossing accidents represent only 2%-to-3% of the total killed on the nation's highways each year, there is evidence that the public, through the Congress, wants them reduced even more.

Under the Federal Railroad Safety Act of 1970, the Secretary of Transportation is directed to submit to the President and the Congress, within one year of enactment, a comprehensive study of the problem of eliminating and protecting railroad grade crossings. A study of measures to protect pedestrians in densely populated areas along railroad rights-of-way is to be included. The Secretary must also undertake a coordinated effort toward solving the grade-crossing problem.

● **Accident trend down.** In 1969, there were 3,792 crossing accidents involving pedestrians and vehicles with trains which resulted in 1,492 deaths and 3,691 injuries. These figures were the lowest since 1966, and some observers hope they forecast improvement in crossing safety. Figures for the first five months of 1970 back up this hope: The trend is still downward.

Greater safety is traced by experts to continuing emphasis in driver training courses, especially in the high schools, on the dangers of grade crossings; and to the continued programs by railroads and local and Federal governments in upgrading protection equipment at crossings.

Information furnished to Railway Age by the railroads (since crossing-protection equipment was developed in the 1920s) indicates that some 56,000 highway-railroad grade crossings are now protected by flashing-light signals with or without automatic half-gates. Thus, automatic protection devices are installed at about 25% of the rail-highway grade crossings in the U. S. New installations are being made at a rate of about 1,300 crossings yearly.

● **Protect or separate.** Obviously, the best way to eliminate grade crossing accidents is to make it physically impossible for automobiles and trucks to collide with trains. But the cost for grade separations has been put at $100 billion or more for the 225,000 rail-highway grade crossings.

A less costly approach has been suggested by Alan M. Voorhees Associates in a study for the Federal Railroad Administration. Improvements costing $580 million to 30,000 rail-highway grade crossings could reduce accidents by 25%, the study reported. Other recommendations in the study were to (1) develop special devices which will help reduce accidents at grade crossings with low vehicle and train volumes; (2) improve cost-benefit information as a basis for selecting improvement projects of merit; and (3) eliminate all unnecessary crossings and provide protection for the crossings allowed to remain.

● **Money: Who's got it?** Local, state and Federal governments are the main sources of financing. Fortunately, some states back in the '30s—Illinois being one of the pioneers—recognized that the motoring public should help pay for crossing-protection equipment. Ratios used by many local and state governments are 5% city, 5% county, 10% railroad and 80% state funds for installation of crossing-protective devices. In many cases, where the crossing is of a state highway only, the state will pay 90% of installation costs. California will now pay a portion of the cost of maintaining crossing protection equipment on state highways.

At present, states may use 10% of the Federal highway trust fund for grade-crossing projects, but this is not mandatory. ASTRO recommends that states be requested to use 10% of this Federal highway fund for grade-crossing projects. Also, it is recommended that this 10% not be limited to Federal-aid highways as is the present restriction. Additionally, ASTRO recommends that uniform Federal safety standards be set for all grade crossings.

● **It's only $25 million.** In today's trillion-dollar Gross National Product economy, the cost for improving safety at rail-highway grade crossings seems almost trivial. But the task at hand isn't trivial, because in most collisions of trains and motor vehicles, someone gets killed, or injured—usually the motorist. At the present installation rate of about 1,300 crossings equipped each year (with new or improved crossing protection equipment), the cost is about $25 million.

For the nine manufacturers that supply this safety market, equipment costs come to about $12 million per year, and a firm's share depends upon its ability to supply total systems—flashing-light signals, gates and controls. Accordingly, all do not share equally. Also, the total market is relatively small. Product planners today usually talk about markets in terms of hundreds of millions of dollars. In the field of electronic controls, a $50-million annual market is considered a small one—though it may, hopefully, grow into the hundreds of millions. The point is this: Unfortunately, grade-crossing protection equipment is too small a market to attract research and development money of the kind that many consider necessary. What the public wants and needs is a simple, very inexpensive, yet sophisticated grade-crossing control system. Such a system will never fail; it will be able to bar the motorist at the last possible second before a train would hit him if he proceeded over the crossing. There is some interest here, from the FRA's Office of High Speed Ground Transportation. M. B. Mitchell, acting director of OHSGT, explains:

"We are actively seeking to develop a low-cost advance warning system for protection at highway-railway grade crossings. There is a critical need for reducing the present cost of from $10,000 to $40,000 per crossing for this protection. We want to develop more sophisticated sensing systems, especially to control highway traffic flow based on train speeds. Several such systems are currently under review and we want to take the more promising into actual demonstrations." ■

CROSSING PROTECTION: A guide to suppliers of control and protection equipment

Electronics Division, Erico Products, Inc. (Controls)

General Railway Signal Co. (Controls, flashing-light signals and automatic gates)

Harmon Electronics Inc. (Controls, flashing-light signals and automatic gates)

Marquardt Industrial Products Co (Controls)

Railroad Accessories Corp. (Controls, flashing-light signals and automatic gates)

Servo Corp. of America (Controls)

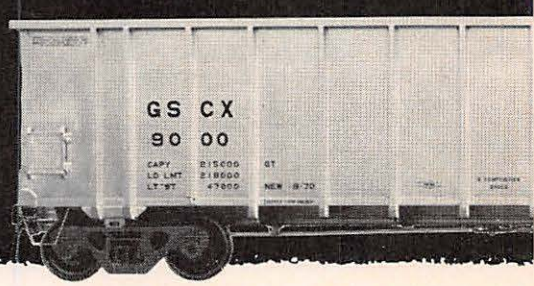
Transcontrol Corp. (Controls)

Western-Cullen Division, Federal Sign & Signal Corp. (Flashing-light signals and automatic gates)

Westinghouse Air Brake Co., Signal & Communications Division (Controls, flashing-light signals and automatic gates)

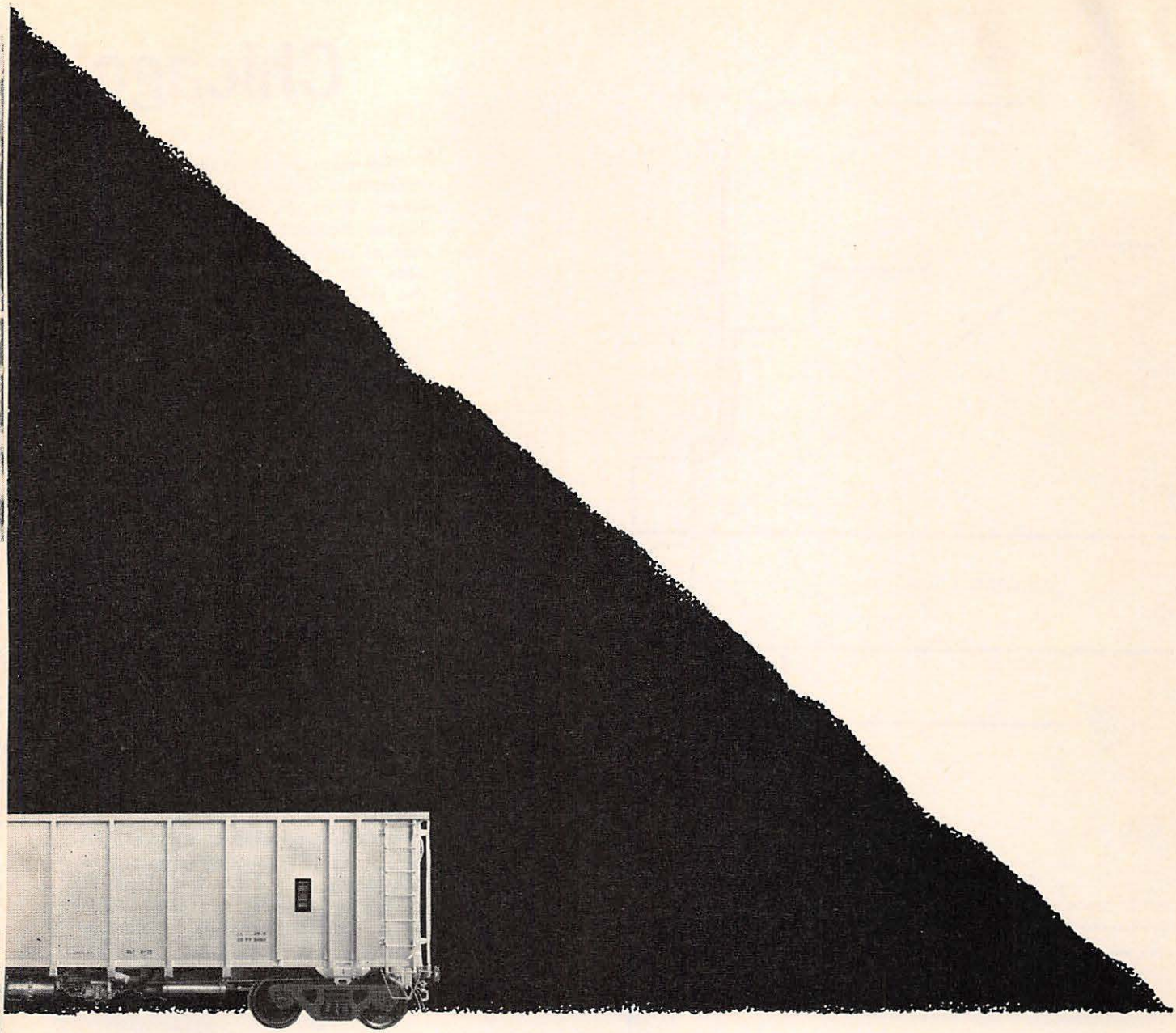
Cleveland Electric Illuminating will haul an extra 952 tons of payload per unit train trip and save money in the process. How?

Alcoa aluminum gondolas.



Cleveland Electric Illuminating Company is the second large utility to announce the use of aluminum-bodied gondolas for mine mouth-to-power plant unit trains. CEI expects to save about $3,500,000 a year, or about 75 cents a ton, with unit train rates. And part of these savings will come from the extra eight tons of coal per car they will haul on 119-car unit trains traveling between mines in southeastern Ohio and Cleveland.

The 295 cars, built by Greenville Steel Car Company and leased to CEI, have a light weight of 47,000 lb and carry 108 tons of coal (vs 63,000 lb and 100 tons for a similar steel gondola). They will be used for two unit trains that will make the 325-mile round trip every other day with 13,000 tons of coal per train. That's 952 extra tons payload.



The 3,850-cu-ft gondolas have welded aluminum bodies bolted to steel underframes. A polysulfide inhibitor prevents electrolytic action between the dissimilar metals. The body is built of Alcoa® aluminum alloy 5083 plate and alloy 7005 extrusions.

CEI and Greenville will both benefit from the other advantages of aluminum cars. They need no painting, need less motive power on empty runs and have higher salvage value. You can get "tailor-made" information on the savings possible with aluminum cars on unit trains, including a complete computer economic analysis, by contacting M. Lee Peterseim, Aluminum Company of America, 1024-B Alcoa Building, Pittsburgh, Pa. 15219

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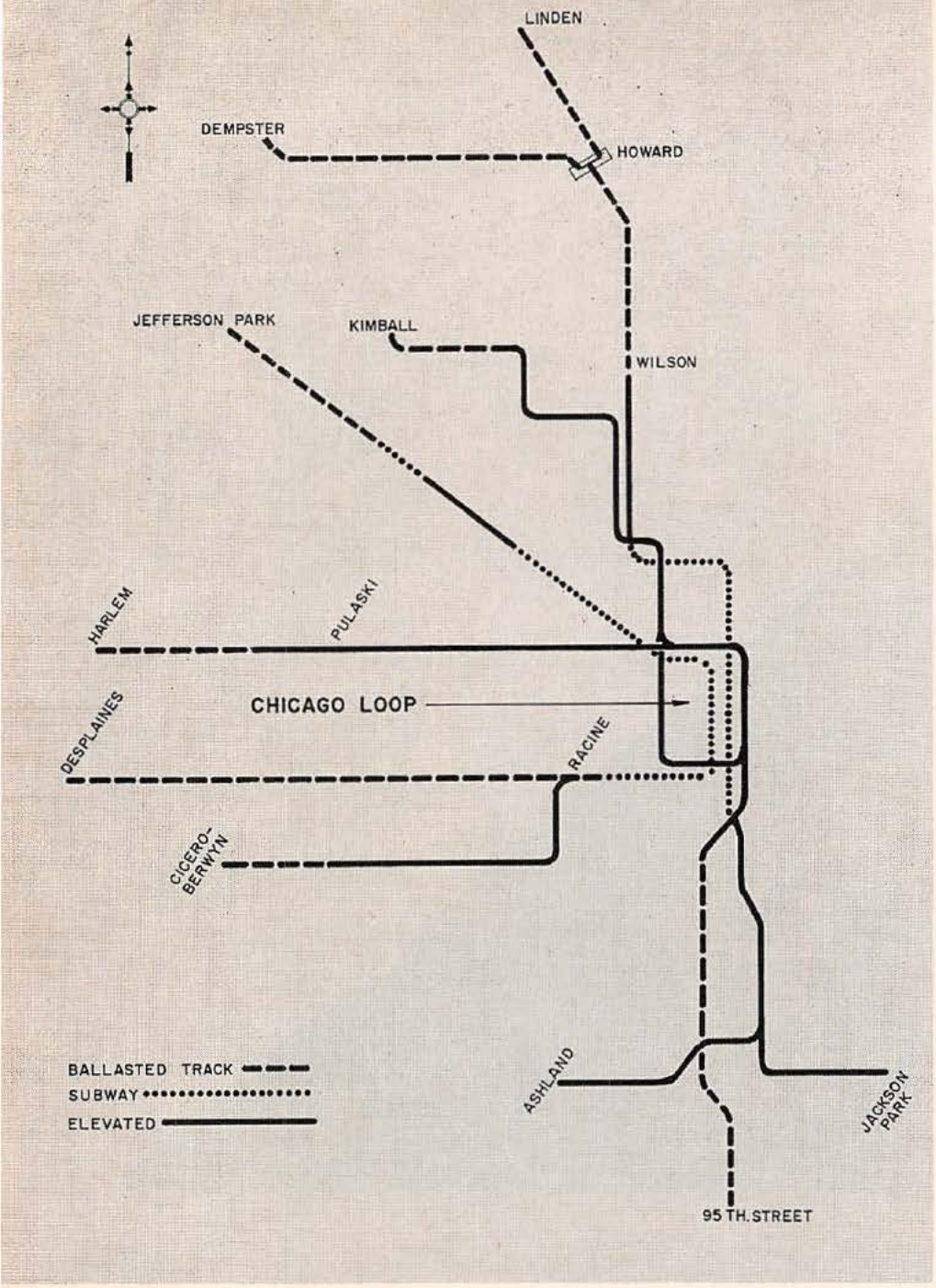
"Not many people realize what a big operation a transit system can be," observes Evan E. Olmstead, Chicago Transit Authority's general superintendent of engineering. "For instance," he adds, "the annual operating expenses of the CTA for 1970 will run around $180 million. Chicago Transit Authority is the second largest transit system in the United States, carrying nearly a half-billion passengers yearly on rails and bus lines."

A quick check shows that only one in four line-haul Class I roads had operating expenses of this amount or more in 1969. Those that did are several thousands of miles long. On the other hand, the CTA has only 90.2 first-track miles, 195 total revenue track-miles and, with yards and crossovers, a total of 243 track-miles. Of this mileage, 118 miles are ballasted track, 104 miles are supported on open-deck elevated structures and 21 miles are in subways.

Olmstead had operating expenses of $7.4 million for 1970 and capital expenses of less than $1 million. The M/W ratio of the CTA is extremely low, 4.1%, compared with an average of 13.1% for Class I roads.

● **Cost accounting is different.** Because of accounting procedures adopted by the CTA, a limit is set on the amount of work that can be done under operating expenses, whether or



RAPID TRANSIT SYSTEM of Chicago Transit Authority consists of 118 miles of ballasted track, 21 miles of subway and 104 miles on elevated structures.

RECENT TRACK EXTENSIONS are built in median strips of auto expressways.

BIG JOB was replacing members of a bent supporting one end of a bridge.

ELEVATED STRUCTURE INSPECTION is helped by truck-mounted aerial ladder.

Transit works with low M/W ratio

not the material is being replaced in kind. Hence, work becomes a capital budget item whenever rail is to be renewed on 330 linear feet or more of single track. Crossties become capital budget items when renewed for this same track distance. On bridges and the elevated structure, renewal of any major structural member is a capital budget item.

Most rail on the system is of 90-pound section, but 100-pound, 112-pound and 115-pound rail sections are also used. About 30% of rail is welded into long lengths.

During 1969, the city of Chicago, with the assistance of a Federal grant, built track extensions in the median strips of the Kennedy and the Dan Ryan Expressways. These were constructed of 100-pound rail, welded into continuous strings and supported on French RS-type SL concrete ties. The oxyacetylene process was used for shop-welding these rails into strings and the aluminothermic process for making field welds. The longest welded string is 8,000 feet.

Rail corrugations, which present a noise problem in the subway, are minimized by a car equipped with grinding stones. Curve wear presents a problem because of the many sharp curves, some as much as 64 degrees. In the past 10 years, 20 track-miles of rail and ties have been renewed on the elevated structure and one mile on the ballasted tracks. The Authority anticipates increasing this rate, based on availability of capital funds. In the subway, no rail except on some curves and in special work has been renewed in 25 years. In 1969, 30,800 feet of rail and 12,900 ties were renewed on the system.

● **Department organization.** Olmstead, who reports to Thomas B. O'Connor, general manager, is responsible for all CTA tracks, bridges, buildings, land and the engineering relating to them. Reporting to him are P. J. Minogue, administrative engineer in charge of administration; H. T. Luebeck, supervisor of real estate; C. G. Kalogeras, superintendent-design; T. L. Wolgemuth, superintendent of track and structures; and G. Millonas, superintendent of buildings and construction.

The work force for taking care of the fixed properties is organized into three main divisions—Track, Structures and Buildings.

The track division is headed by a superintendent of track and a general foreman of track who direct a work force of 163 men. This division, handling all track work on the system, is broken down into several specialized units.

Rail laying and tie renewals are handled by seven construction gangs. Three work on the 104 miles of open-deck track and four take care of the work on the 118 miles of ballasted track. These gangs have no fixed headquarters but are provided with "work" buses for their field headquarters.

Ordinary track maintenance and inspection is handled by four section gangs. These units are headquartered at the road's several shops and ride the CTA system to and from work sites.

● **Track inspected twice a week.** Certain men in each of the four section gangs are assigned specifically to the inspection of track. These men, working in pairs as a safety precaution, do no corrective work themselves but report conditions needing attention to their foremen who have the repairs made. This way, inspection is not slighted and the entire system gets inspected twice each week. If inspectors discover a deficiency which is an immediate safety hazard, they remain at the location, stop the next train and use its train phone to notify Operations Control so corrective action can be taken.

In addition, two trackmen, equipped with a Sonirail instrument, test all bolted joints for defects. These are full-time jobs and, as a result, all bolted joints on the system are inspected twice each year.

The track gangs are served each night by two work trains. Each work train, equipped with an Austin-Western Model 210 P crane and manned by four trackmen and a derrick operator, delivers construction materials, such as rail, ties and shims, to the work sites, picks up debris and scrap left from the day's work, and removes other material. Each work train is operated by a crew of the transportation department, a motorman, conductor and two switchmen.

● **Not many machines.** Unlike their contemporaries on line-haul railroads, the CTA track force has few machines at its disposal, so that much of the work must be carried out manually. This is brought about by conditions peculiar to a transit system. The close track centers and the presence of the third rail leave no room for setting on-track machines off the rails. Even if this were possible, the frequency of trains (which is as close as three minutes while track forces are at work) would make their use impractical.

Even rail laying is accomplished manually and must be carried out on Sundays or at night when traffic is infrequent enough to permit single-track operations. Men from the electrical department work with the construction gangs to cut off the power in sections where work is being done.

The track crews also have the assistance of air compressors powered by 600-volt dc motors and mounted on rubber-tired wheels. These can be brought to the work sites by truck and parked near the ballasted tracks or beneath the elevated structures. The compressors are used for powering rail drills, spike hammers, tie borers and power bolt wrenches.

Tie renewals do not require the undisputed possession of a track and this work is carried out manually under traffic in the daytime.

● **New machines are available.** Most tamping and lining equipment available on the market is designed for use by line-haul railroads. Many of these units do not provide the clearances necessary for the third rails and station platforms of a transit line. Hence, most such work has also been done manually. However, with the cooperation of Jackson Vibrators, Inc., a modified version of the Model 2300 tamper was developed. A truss was incorporated in this unit, which permits it to be used for profiling the track. The truss is used in lieu of the normally-used side jacks which might interfere with the third rail.

The CTA acquired this modified machine along with a Jackson electronic surfacing light beam for profiling the track. It also purchased a second Model 2300 tamper similarly modified and a Kershaw track liner equipped with a Nordberg Line Indicator. This team of machines gives the Authority sorely needed mechanized tamping and lining equipment. These units are worked by a foreman and six track-equipment operators and replace the hand labor formerly used. The first tamper, working ahead, jacks every third or fourth tie and the other unit tamps every tie. About 400 to 500 feet per hour are obtained with this gang. The work is generally done at night on week days and from dawn to dusk on Sundays.

● **Structures are old.** The structures division is headed by a superintendent of structures. This division is responsible for maintaining 15 truss and

through-plate girder bridges and about 4,500 spans, totaling 39.5 miles, of elevated steel structure, much of which is 70 years old. Two movable bridges also form part of the CTA system, but these are maintained by the city of Chicago, the CTA handling only the track work over these structures.

The force handling the repairs and maintenance of the elevated structure is under the jurisdiction of a general ironworker foreman. He directs four construction gangs, four mobile welding units and four ironworkers assigned to structural inspection. The total structures force is comprised of four ironworker foremen, 36 ironworkers and 11 laborers.

The repair work on structures is scheduled from the inspection reports of four ironworker inspectors. Two inspectors team up to inspect the 15 bridges twice each year. All other steel structures are inspected about once every three years. The CTA presently is using a truck equipped with an aerial ladder for inspection purposes. This unit has greatly facilitated the inspection of the elevated structure so that four of these spans can be completely inspected in detail in one day.

Most of the work of the steel construction and welding crews consists of the renewal of top and bottom flange angles of girders, and replacement of, or repairs to, other structural members. Occasionally, components of the elevated structure are damaged by motor vehicles and are repaired by the iron workers.

● **Determining track-work priority.** CTA needed a method for making decisions as to where it should apply its maintenance and capital budget allotments to the best advantage. In 1968, Paul E. Swanson, the road's supervising civil engineer, developed a track-evaluation plan that allows use of a GE 415 computer for quickly pinpointing priority areas.

This called for a walking inspection survey of the entire system—a formidable undertaking. At the discretion of the inspector, the track was divided into short segments each no longer than 660 feet. The segments are of uniform construction and alignment (i.e., tangent track, curved track, special trackwork and so forth), and are identified by stationing. Each segment also is identified by route and track number. This survey has been completed. Another such inspection probably will not be needed for another five years.

A system of code numbers and letters was devised for identifying the item being evaluated. A point system, based on the extent of wear and deterioration, was assigned for evaluating the conditions found. For example, headwear was assigned a zero point value for wear ranging from zero to ⅛-inch wear, and a point value of 5 for wear that was ⅝-inch or more, with the intervening numbers assigned for ⅛-inch increments.

In addition, the point system was also applied to rail sidewear, rail gauge, rail corrugations, tie conditions, track line, cross level, longitudinal profile, and ballast condition for ballasted track. On the elevated structure, the condition of the timber guard rail was also evaluated in a similar manner.

The computer print-out provides weighted averages of various combinations of parameters for each route. These are printed on a final summary sheet together with a system average so that comparisons can be made. From this print-out, management can decide where to spend its funds for track work.

Looking forward, Olmstead commented: "Authority personnel express optimism concerning the future of the transit industry in general, and the maintenance and updating of fixed properties in particular. This optimism is based in part on recent legislation making available Federal funds for the improvement of mass transit." ■

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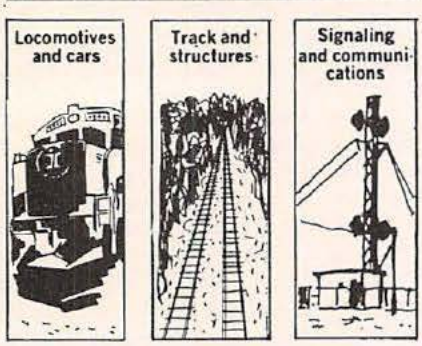
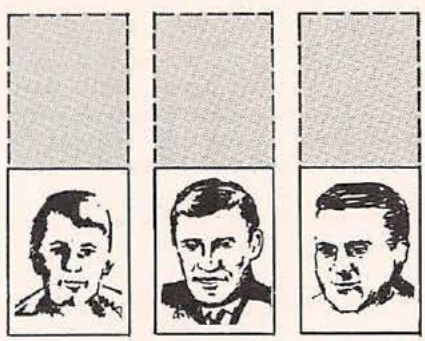
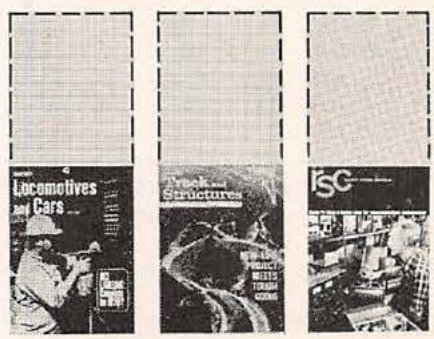
The readers get the subject matter



1. The railroad market consists of three sharply defined markets. They are as utterly different as a locomotive is different from a stretch of track — or as both are different from a communication or data processing system.



2. Concerned as they are with different technical problems, men on the lower management and supervisory level in each department must have very specialized information about *their own* departments. (Developments in other departments are not their concern.)



3. For the men in each department on this lower level we publish a different magazine — a technical monthly — a specialized, vertical, departmental publication.

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If you want to talk to readers who are listening, the Railway Age Group is for

People in the News

ASSOCIATION OF AMERICAN RAILROADS.—Has announced creation of two new divisions in the Research and Test Department. **James Britton** named to the new post of manager of tests, heading up the new Test Division. He will have responsibility for testing supplier and railroad components, for providing technical services to railroads and for support of committees of other AAR departments. **Robert Byrne** continues as research director and, assisted by Mr. Britton, will have general administrative responsibility for the AAR's Research Center in Chicago. The new Research Division will be responsible for the planning and execution of AAR-conducted research programs as well as some contract research projects. Mr. Britton has been with the AAR since 1951 and Mr. Byrne since 1953.

BANGOR & AROOSTOOK.—Kenneth S. Ludden, assistant to vice president–marketing, Bangor, Me., retired Dec. 31, after 36 years with the BAR.

BESSEMER & LAKE ERIE.—C. W. Morrison, engineer track, Greenville, Pa., appointed to the newly created position of engineer maintenance of way. **William C. Howe,** engineer bridges and buildings, appointed to the newly created position director engineering services, maintenance of way. **James E. Foreman,** assistant engineer, appointed engineer bridges and buildings, maintenance of way. **J. Bruce Wackenhut,** engineer structures–operations, named engineer track, maintenance of way. **Bernard R. Forcier,** roadmaster, appointed manager maintenance planning, maintenance of way. **John J. Ridgeway,** engineer structures–processes, named project manager, maintenance of way. **Richard E. Kuban,** senior design engineer, appointed manager engineering design, maintenance of way.

DELAWARE & HUDSON.—Harold J. Wilson, comptroller, Albany, N.Y., retired Dec. 1, after more than 47 years of service. **Joseph E. Keenan,** comptroller, **Erie Lackawanna,** Cleveland, will also serve as comptroller, D&H. **Thomas W. Eagan,** general accountant, promoted to assistant comptroller.

ELGIN, JOLIET & EASTERN.—Richard B. Hood, secretary, elected treasurer, with headquarters as before at Pittsburgh, Pa. **John E. Ralph, Jr.,** appointed assistant treasurer, Pittsburgh. **Robert J. Driscoll** appointed assistant secretary and assistant treasurer, Chicago.

LEHIGH VALLEY.—James W. McDonnell, controller, Northeastern Region, **Penn Central,** New Haven, Conn., appointed vice president and treasurer, LV, Bethlehem, Pa., succeeding **Robert E. Kappauf, retired. Miss Minnie Dobes,** acting controller, appointed controller, Bethlehem, Pa. **Charles E. Futcher,** manager of disbursement accounting, appointed assistant controller.

TRANSIT

Thomas H. Lipscomb has been named general manager, **Southeastern Michigan Transportation Authority,** Detroit, Mich., effective Feb. 1. Mr. Lipscomb was formerly executive director, Delaware River Port Authority and president, Port Authority Transit Corp.

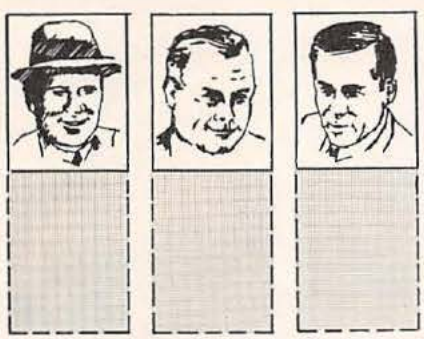
On Jan. 25 **William S. Allison** was sworn in as deputy administrator, **Department of Transportation,** Urban Mass Transportation Administration, Washington, D.C. Mr. Allison was formerly executive vice president, Harbridge House, an international management consulting firm in Boston.

OBITUARY

Elmer E. Crossan, 65, sales manager –freight forwarder and consolidator, Marketing Department, **Burlington Northern,** Chicago, died Jan. 8.

market...

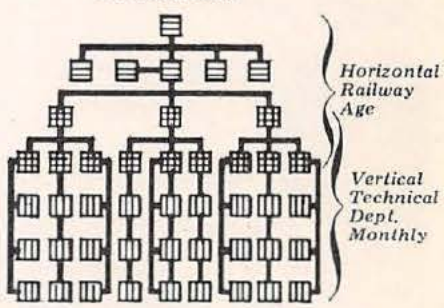
they want Result: they're more interested, more involved



4. Men at the upper level of each department are just as concerned as the men under them with their special departmental problems, but they must also keep up with developments in *other* departments. And for this they need reports in not-too-technical language.

5. For these top departmental managers — and for the general management men above them — we publish a horizontal management semi-monthly, which reports and interprets developments broadly interesting to all (in non-technical terms understandable by all).

Schematic chart



6. Railway Age serves general management and top departmental management — the specialized monthlies serve the technical department supervisory men. *Both* serve the top departmental management.

want As a result of this efficient, specialized coverage, a campaign in the Railway Age Group generally costs less per thousand than in the single magazine that tries to be all things to all readers.

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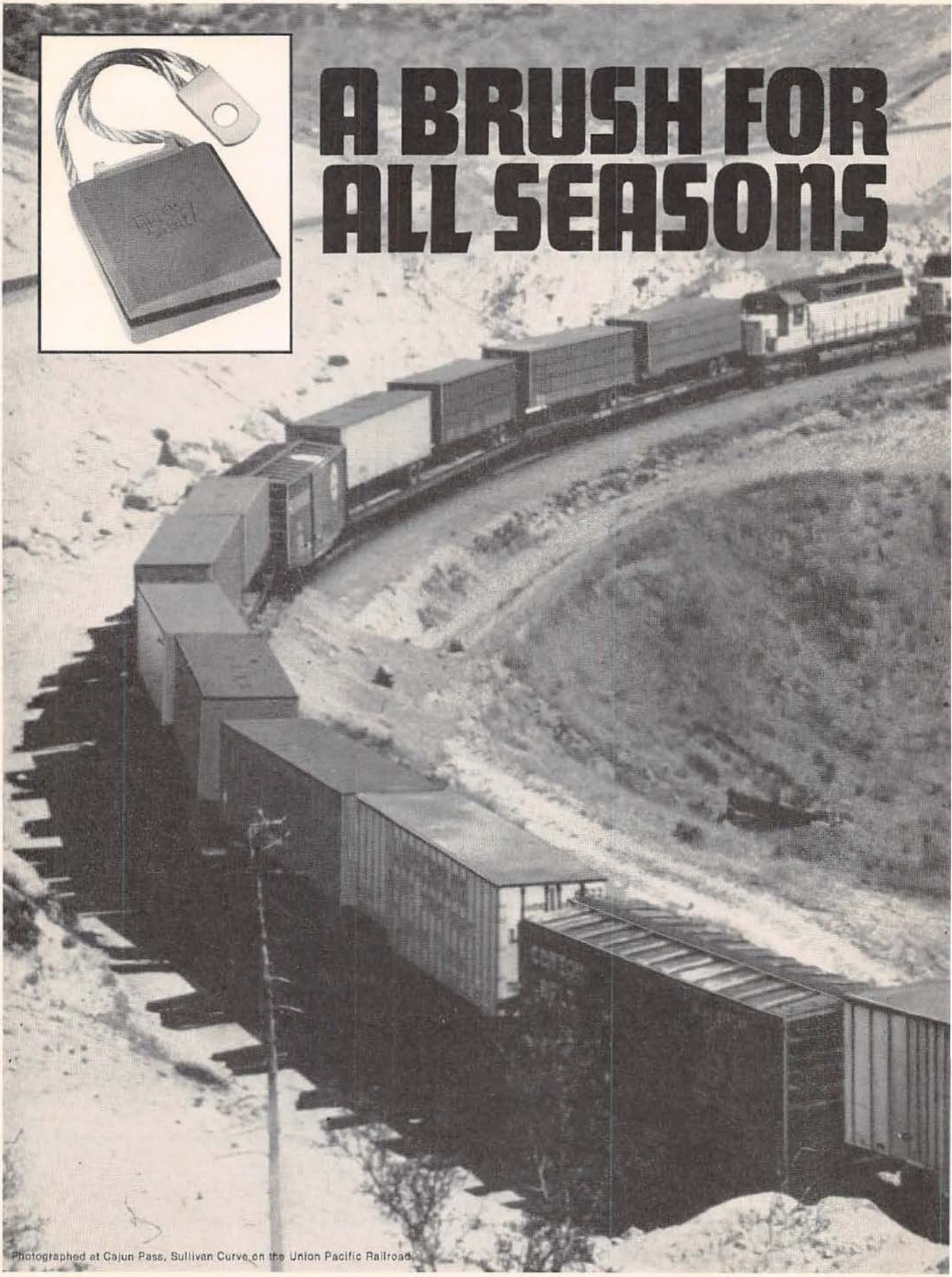
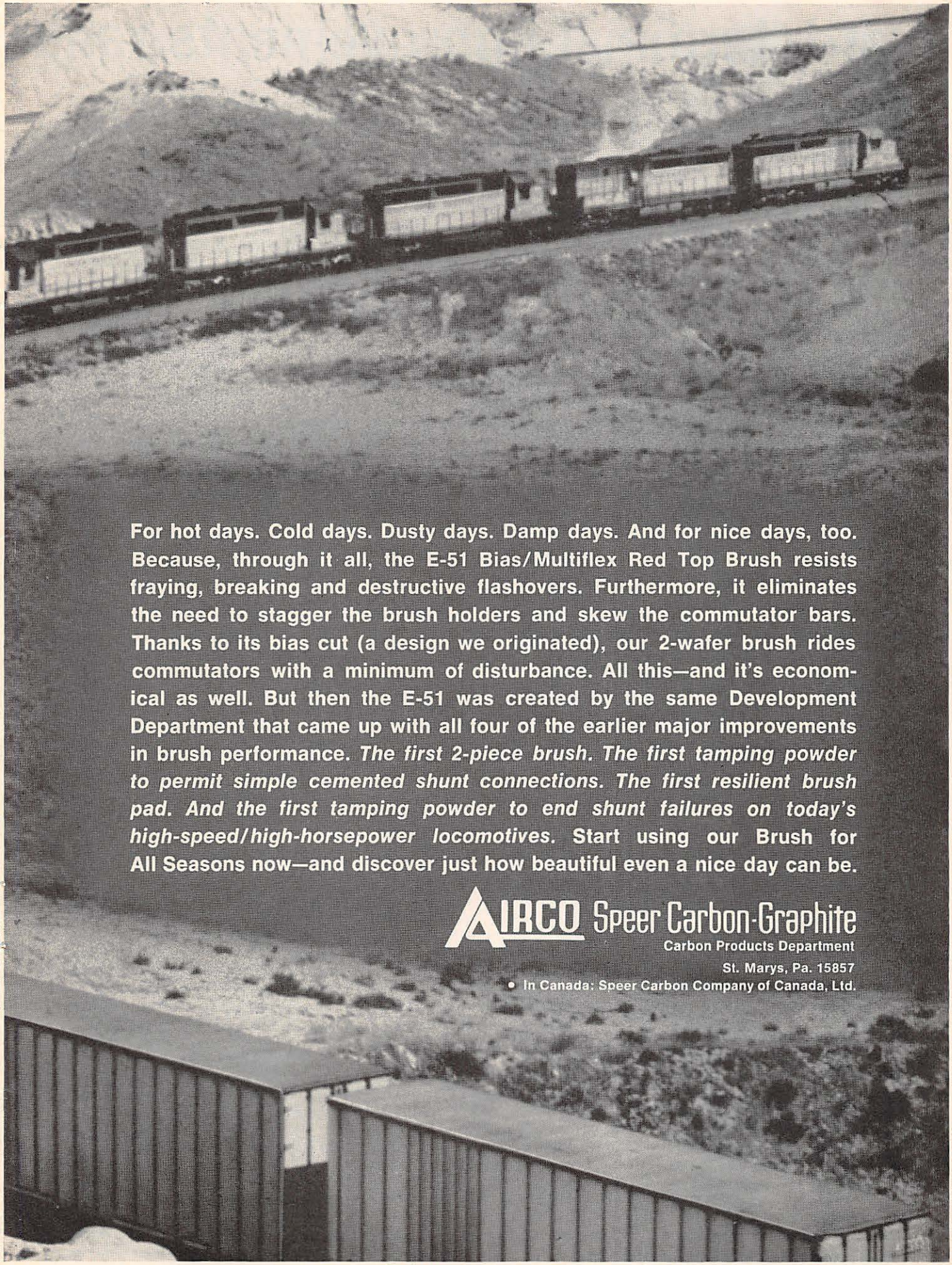

A BRUSH FOR ALL SEASONS
Photographed at Cajun Pass, Sullivan Curve on the Union Pacific Railroad.


For hot days. Cold days. Dusty days. Damp days. And for nice days, too. Because, through it all, the E-51 Bias/Multiflex Red Top Brush resists fraying, breaking and destructive flashovers. Furthermore, it eliminates the need to stagger the brush holders and skew the commutator bars. Thanks to its bias cut (a design we originated), our 2-wafer brush rides commutators with a minimum of disturbance. All this—and it's economical as well. But then the E-51 was created by the same Development Department that came up with all four of the earlier major improvements in brush performance. The first 2-piece brush. The first tamping powder to permit simple cemented shunt connections. The first resilient brush pad. And the first tamping powder to end shunt failures on today's high-speed/high-horsepower locomotives. Start using our Brush for All Seasons now—and discover just how beautiful even a nice day can be.
AIRCO Speer Carbon-Graphite
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St. Marys, Pa. 15857
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Circle 11 on coupon page 27

Yard, terminal improvements rank

As was the case last year and the year before, Class I roads in Canada and the United States propose to spend the largest percentage (35) of their total allotments to improve their fixed properties in yards and terminals in 1971, according to reports submitted to Railway Age. Long Island's proposed extension of electrification and construction of additional substations in 1971 (see p. 41), with assistance of state and Federal funds, put this category in second place with 26%, followed by 11% for new tracks.

Following are brief descriptions of improvement projects reported to be authorized for 1971 and which are estimated to cost $100,000 or more.

Burlington Northern: Extend siding at Burke, Ill., $114,000; construct first phase of $30-million computer-controlled classification yard at Minneapolis, $3-million; extend yard tracks at Dilworth, Minn., $282,000; construct new siding at Salem, Nebr., $237,000; construct new siding at Adams, Nebr., $179,000; construct new siding at Clostrip, Mont., $130,000; extend siding at Fryburg, Mont., $116,000; construct first phase of $2-million computer-controlled classification yard at Spokane, $750,000; construct one phase of $1.9-million new bridge and connecting track over Spokane River at Spokane, $250,000; construct yard facilities at Vancouver, B.C., $290,000; construct yard facilities at Vancouver, Wash., $150,000; construct first phase of $14-million Cemetary line change and Latah Creek bridge at Spokane, $4,200,000; renew bridge at Bristol, Ill., $103,000; renew bridge at Wheeling, Mo., $163,000; renew bridge at Chalco, Nebr., $188,000; renew bridge at Holdredge, Nebr., $107,000; renew bridge at Wilsonville, Ore., $100,000; renew bridge at Pasco, Wash., $120,000; construct new connecting tracks at Casselton, N.D., $685,000; construct overhead crossings at Yakima, Wash., $125,00; construct underpass at Yakima, Wash., $110,000; install CTC between Red Oak and Creston, Iowa, $325,000; extend block signal system between St. Paul and Minneapolis, $154,200; install CTC between Spokane and Marshall, Wash., $382,000; expand EMD dial telephone switching facilities at St. Paul, $393,000; establish EMD dial telephone switching center at Fargo, N.D., $186,000; establish EMD dial telephone switching center at Great Falls, Mont., $147,000; expand EMD dial telephone switching facilities at Billings, Mont., $135,000; expand EMD dial telephone switching facilities at Spokane, $118,000; expand EMD dial telephone switching facilities at Seattle, $273,000; install additional multiplex equipment on existing microwave system, $301,500; install multiplex, data sets, Teletype units in connection with Compass project on system, $523,000 rearrange facilities for container handling at Berwyn, Ill., $250,000; construct pedestrian underpass at Lisle, Ill., $250,000; install air conditioning in general office building at St. Paul, $3,800,000; rearrange washing and fueling facilities at Livingston, Mont., $135,000; convert terminal water system to city water at Galesburg, Ill., $252,000; extend one-spot car-repair facility at Galesburg, $258,000; construct paint shop and relocate transfer table at Havelock, Nebr., $750,000; install 800 W emergency stand-by power generator for computer complex and rearrange 250 KW stand-by power generator for critical transportation facilities at St. Paul, $199,000; and install additional dust-control measures at Allouez taconite facility at Superior, Wis., $100,000.

Chesapeake & Ohio/Baltimore & Ohio: Install spot car-repair facility at Haselton yard, erect a building for car-repair forces at Ohio Junction, install a yard air and oil system and provide a mobile unit to effect minor repairs to cars, all at Youngstown, Ohio, $170,000; construct a modern spot-repair facility including track change, erection of a building and related car-repair appurtenances at Hamilton, Ohio, $180,000; convert local controlled interlocking at West Ashland, Ky., so it can be remotely controlled from a modern centralized machine at the interlocking at Catlettsburgh, Ky., $252,000; install a couple-in-motion weighing station including the related track work at Riffe, W. Va., $416,000; alter tracks to permit simultaneous moves through Cincinnati Junction, including installation of an electric interlocking plant at Cincinnati, $638,000; improve track arrangement in connection with highway changes in the yard area involving construction of an underpass and closing of grade crossings at Saginaw, Mich., $955,000; extend industrial spur 1.4 miles and construct other tracks to serve the Howard Research & Development Corporation Industrial Park at Guilford, Md., $394,000; and install underdrains, oil separator and secondary treatment plant to handle oily wastes from operations at Wyoming yards and shops at Grand Rapids, Mich., $164,305.

Chicago & Eastern Illinois: Construct additional yard track together with six crossover tracks at 37th street, Chicago; and install 113 miles of CTC signaling, including three automatic and one remote-controlled interlocking plant between Findlay Jct., Ill., and Benton.

Chicago, Milwaukee, St. Paul & Pacific: Enlarge existing auto marshalling facilities to handle increased traffic at Minneapolis, $125,000; construct a modern auto-marshalling facility at Spokane, to accommodate distribution of automobiles in eastern Washington, Idaho and western Montana, $600,000; and install five 28-foot beam spans on two tracks at bridge Z-496 at Savanna, Ill., replacing pile trestle, $110,000.

Chicago, Rock Island & Pacific: Construct a connecting track and crossover between Nettleton and St. Joe, Mo., $260,000.

Delaware & Hudson: Replace Bridge 75.34 at Scranton, Pa., $121,800; and replace highway vehicles on system, $143,370.

Lehigh Valley: Replace existing overhead bridge consisting of steel trusses and timber floor built in 1874, and rebuilt in 1921, with prestressed-concrete deck-type structure which will conform with present-day safety requirements at Read Valley, N.J., $240,000; replace existing overhead bridge consisting of a three-span through girder, through-truss structure built in 1898 with prestressed-concrete deck-type structure at Bloomsbury, N.J., $160,000; replace three-span wooden through-truss structure, built in 1874, with prestressed-concrete deck-type structure at Metuchen, N.J., $140,000; and replace two existing bridges built in 1907 with prestressed-concrete deck structure at Jersey City, N.J., $118,800.

Missouri Pacific: Replace creosoted pile trestle Bridge 2628 with reinforced-concrete trestle, 779 feet long at Newport, Ark.; replace creosoted pile trestle, 1208 feet long, with reinforced-concrete trestle 1,196 feet long at Bridge 2992, New Augusta, Ark.; replace creosoted pile trestle portion 854 feet long of the west approach to Bridge 20.4, Highlands, Tex., with reinforced-concrete trestle, 854 feet long; extend five classification tracks in the East Bowl of Neff yard at Kansas City, Mo., an average of 1950 feet each; in Settegast yard construct diamond leads to West yard, crossover tracks from East to West yard, and an engine-ready track and relay the lead tracks in West yard at Houston; upgrade master retarder in classification yard at North Little Rock, Ark., to handle heavier

high in '71 programs

loads; install microwave system to fulfill communications requirements in connection with the implementation of a Transportation Control System from Pleasant Hill to Nevada, Mo.; install microwave system between Osawatomie and Coffeyville, Kan., to fulfill communications requirements in connection with the implementation of a TCS system; upgrade communication wire lines on system in connection with the implementation of a TCS system; and install communication equipment for Terminal Car Control and Customer Service centers at 13 locations.

Penn Central: Renew spans of U.G. Bridge 2.65 at Philadelphia, $284,000; install new spans at U.G. Bridge 4.22 at Kearny, N.J., $213,000; replace timber trestle with steel at U.G. Bridge 134.35 near Washington, D.C., $281-000; install trestle at Bridge 171.71, Vandalia, Ill., $101,000; construct yard office building in Meadows yard at Kearny, $100,000; construct a support yard for Harrison Radiator at Lockport, N.Y., $380,000; construct 25,920 feet of track for General Motors Corp., at Willow Run, Mich., $957,-000; modernize Frontier Yard at Buffalo, N.Y., $191,000; install connection for General Foods at Newark, Del., $197,000; build a track connection at Crestline, Ohio, $206,000; construct a track connection at Alexis, Ohio, $401,000; build tracks at Camp Kilmer area at Edison, N.J., $2.5 million; construct a connection at receiving yard in Metuchen, N.J., $174,000; establish a new support yard at Mechanicsburg, Pa., $308,000; expand yard at Lansing, Mich., $530,000; accomplish Phase I with six yard tracks at Willow Run, Mich., $565,000; lay a new wye track and two support tracks at Blue Ash, Ohio, $112,000; make track changes for Union Carbide Corp. at Institute, W. Va., $383,000; construct additional support tracks for Whirlpool Corp. at Findlay, Ohio, $227,000; build two additional support tracks for 55 cars at Evansville, Ind., $109,000; lay a track to serve St. Joseph Lead Co. at Balmat, N.Y., $653,000; erect a new freight forwarder facility at Jersey City, N.J., $8.9 million; construct a side track for Morton Salt Co., at Himrod, N.H., $327,000; expand the area for the storage of coal at Ashtabula, Ohio, $2.2 million; build a loop track for Barnes & Tucker Coal Co. at Tanoma, Pa., $2.5 million; construct additional receiving tracks at Colehour yard, Hammond, Ind., $148,000; build a connection with Toledo Terminal at Toledo, Ohio, $165,000; build a connection with the Alton & Southern at Rose Lake, Ill., $199,000; establish materials distribution facilities at South Altoona, Pa., $235,000; rearrange wheel shop at Altoona, $273,000; construct additional tracks in Reeds yard at Middletown, Ohio, $300,000; install CTC from Johnstown to Kiski Jct., Pa., $407,000; install automatic crossing protection at Dayton, Ohio, $104,-000; install tracks and signals at West Park, Cleveland, $109,000; install connection at Beacon-Hopewell Jct., N.Y., $200,000; connect the branches at Newberry, Pa., $202,000; extend tracks

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Circle 12 on coupon page 27

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Circle 13 on coupon page 27

101 and 102 at N. Palestine, Ohio, $146,000; raise bridges 79.45 and 80.16 at Warren, Ohio, $181,000; make a connection at Gibson Street in Kalamazoo, Mich., $137,000; construct a track connection with the CR&I at Kendallville, Ind., $169,000; expand Frontier yard at Buffalo, $179,000; install automatic switching at New Haven, Conn., $176,000; install switch and retarder machine at DeWitt, N.Y., $177,000; install remote control between Hunter and Dock at Newark, N.J., $133,000; install power crossover and remote control at Brownsville, Pa., $146,000; make track and signal changes at Columbus, Ohio, $462,000; make track connections at Whiting, Ind., and Chicago, $301,000; construct Court Street underpass bridge at Charleston, W. Va., $200,000; modify treating plant at Enola, Pa., $322,000; make Tioga Street improvement at Philadelphia, $113,000; complete Westmoreland Street improvement at Philadelphia, $137,000; reconstruct overhead bridge 9131 at Uhrichsville, Pa., $100,000; replace overhead bridge 194.99 at Renova, Pa., $115,000; work on bridge over State Route 61 at Crestline, Ohio, $125,000; construct bridge over 9th Street in Terre Haute, Ind., $252,000; install power switches in Waverly yard at Newark, N.J., $223,000; install air compressors in Philadelphia, $195,000; expand A. E. Perlman yard at Selkirk, N.Y., $7.5 million; make yard track changes at Enola, Pa., $684,000; construct track and signal facilities in the North Yard at Detroit, Mich., $394,000; expand Buckeye yard at Columbus, Ohio, $3.6 million; make yard expansion at Elkhart, Inc., $1.9 million; install fault detection system at Selkirk, N.Y., $185,000; install remote control from Secane to Philadelphia, $342,000; and install TCS on Detroit branch at Toledo, Ohio, $461,000.

Reading: Construct new TOFC facility on Erie Avenue in Philadelphia, $1.1 million; and extend electrification from Hatboro to Johnsville, $1.7 million.

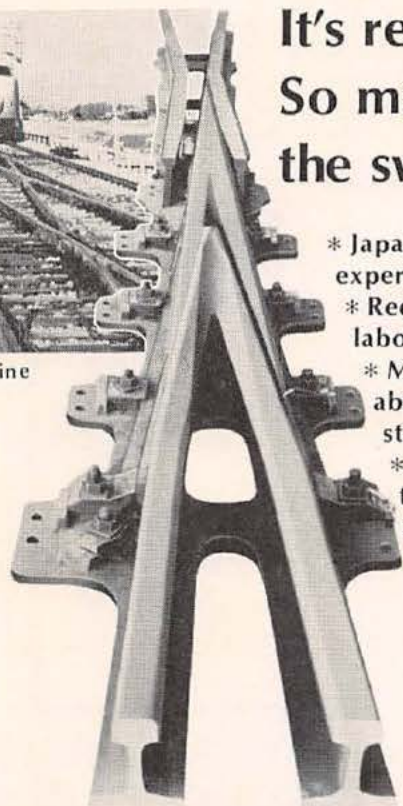
St. Louis-San Francisco: Construct diesel servicing facilities at Tulsa, Okla., $800,000; construct bridge over Luxapalilla River (U.S. Corps of Engineers) at Columbus, Miss., $800,000; replace bridge over Tyronza River at Tyronza, Ark., $260,000; construct trackage for industrial park at Hayetteville, Ark., $133,000; and build trackage for Ralston Purina Co., at Memphis, Tenn., $127,000.

Seaboard Coast Line: Reconstruct bridge at Alaga, Ala., $148,000; reconstruct bridge at Wilmington, N.C., $220,000; reconstruct bridge at Doctor's Inlet, Fla., $813,000; replace timber trestle at Remini, S.C., with concrete trestle, $116,000; replace timber trestle at Ludowici, Ga., with concrete trestle, $131,000; and make track changes at Cordele, Ga., $205,000.

Union Pacific: Install hot-box detectors at various locations on system, $398,000; replace signal pole lines at various locations, $324,000; construct one-spot car-repair facility at Council Bluffs, Iowa, $410,000; replace retarders at North Platte, Nebr., $245,000; replace microwave equipment from North Platte to Grand River, Wyo., $615,000; construct a welding plant facility at Laramie, Wyo., $250,000; construct lead track at Salt Lake City, $305,000; construct a run-through track at Salt Lake City, $140,000; construct yard tracks at Clearfield, Utah, $174,000; install track scales at Pocatello, Ida., $166,000; construct locomotive servicing facilities at Pocatello, $1.4 million; construct locomotive inspection pit at Las Vegas, Nev., $241,000; modify framing yard at The Dalles, Ore., $103,000; replace diesel servicing platforms at Albina, Ore., $146,000; install microwave system between Centralia and Aberdeen, Wash., $113,000; and construct track, paving, etc., for TOFC expansion at Seattle. $247,000. ■

DAIDO's High-Manganese Cast Steel Points and Frogs

New Tokaido Line



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Circle 14 on coupon page 27

Market Outlook

CARLOADINGS

Loadings of revenue freight in the week ended Jan. 23 totaled 498,605 cars, according to the Association of American Railroads. This was a decrease of 0.4% below the preceding week, but 2.5% above the corresponding week last year. Ton-miles generated by carloadings in the Jan. 23 week are estimated at 14.5 billion, 4.2% above the corresponding week of 1970.

REVENUE FREIGHT CARLOADINGS

Commodity	Jan. 23 week	Jan. 16 week
Grain	28,888	26,725
Farm products	19,568	18,762
Metallic ores	19,330	19,293
Coal	97,610	107,053
Crushed stone, gravel & Sand	20,451	19,860
Nonmetallic minerals	8,975	8,725
Grain mill products	20,357	20,657
Food & kindred products	26,117	26,105
Primary forest products	25,466	24,283
Lumber & wood products (except furniture)	13,626	13,096
Pulp, paper & allied products	22,335	22,665
Chemicals & allied products	26,728	26,898
Petroleum products	11,132	10,579
Stone, clay & glass products	15,198	14,684
Coke	8,266	8,107
Metals & products	25,199	25,395
Motor vehicles & equipment	24,466	24,886
Waste & scrap materials	14,921	14,684
Forwarder & shipper assn. traffic	5,802	5,354
All other carloads	63,622	62,133
LCL traffic	548	541
Total cars loaded	498,605	500,485

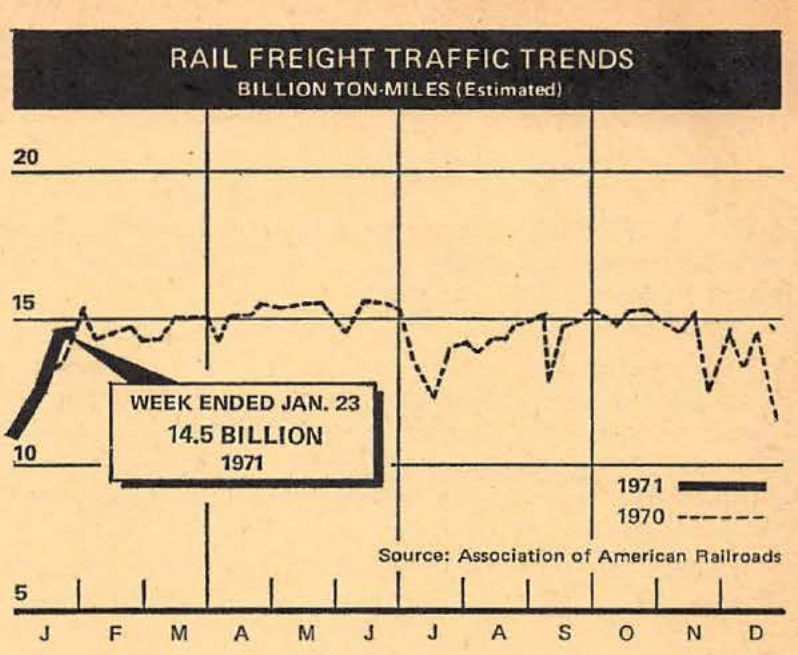
CUMULATIVE TOTAL, 4 weeks	1971	1970	1969
	1,838,561	1,823,125	1,928,486
Estimated revenue ton-miles (billions) 4 weeks	53.1	52.0	54.1

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended Jan. 16 totaled 22,449 cars (6.3% below the corresponding week last year) and 35,648 trailers or containers (down 12.1% from 1970). Cumulative volume for the first three weeks of 1971 is 60,172 cars (off 3.7% from last year) and 94,925 trailers or containers (down 10.3% from 1970).

IN CANADA

7 days ending	Revenue Cars Loaded
Jan. 7, 1971	52,868
Jan. 7, 1970	50,174



NEW ORDERS FOR MACHINE TOOLS*

	December 1970 ($000)	December 1969 ($000)	12 mos. 1970 ($000)	12 mos. 1969 ($000)
Metal cutting tools	41,100	82,800	652,700	1,195,300
Metal forming tools	40,600	26,250	272,100	533,450

MACHINE TOOL SHIPMENTS*

	December 1970 ($000)	December 1969 ($000)	12 mos. 1970 ($000)	12 mos. 1969 ($000)
Metal cutting tools	81,300	118,150	988,600	1,192,450
Metal forming tools	36,900	33,600	451,350	405,100

**Including foreign and domestic.*
Source: National Machine Tool Builders' Association.

SHIPMENTS OF RAILROAD STEEL PRODUCTS

(NOVEMBER AND 11 MONTHS 1970)

	NET TONS			
	November	Per Cent Change*	Eleven Months	Per Cent Change*
Rails, trackwork and equipment	86,412	+33.4	968,230	+1.4
Freight and passenger cars and locomotives	131,443	-24.6	1,806,131	-13.4
Street railways and rapid transit systems	2,784	+17.2	42,611	-12.1

**Per cent change compares 1970 periods with like 1969 periods.*
Source: American Iron and Steel Institute.

Viewpoint

What is the role of regulation?

It's one thing, for railroad men to decry over-regulation and all the problems it creates. It's quite another thing for the ranking anti-trust expert in the Federal government to agree.

Railroad men can rather easily be put-down as chronic complainers, by those with vested interests in status-quo regulation. But it is not so easy to apply the put-down technique to the Assistant Attorney General in charge of the Justice Department Anti-Trust Division, Richard W. McLaren by name.

McLaren's thesis on regulation of surface transportation is that "for the most part, only inefficiency is rewarded . . . and in the long run the nation's resources are seriously mis-allocated."

Under ICC rate-making procedures, he says, "rates generally are allowed to rise to the level of the highest cost carrier in the market . . . Shippers, consumers and carriers all pay the cost of high rates and inefficiency."

He proposes deregulation, in the strongest terms: "We believe that after a suitable period in which regulations are phased out, surface transportation should operate like any other business. Competition, as in most other industries, should be allowed to determine the price, quality and availability of transportation services."

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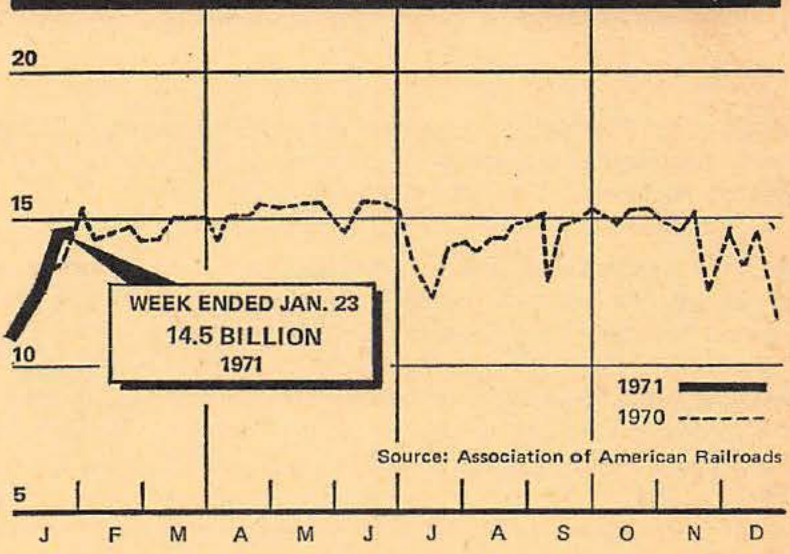
RAIL FREIGHT TRAFFIC TRENDS

BILLION TON-MILES (Estimated)



NEW ORDERS FOR MACHINE TOOLS*

	December 1970 ($000)	December 1969 ($000)	12 mos. 1970 ($000)	12 mos. 1969 ($000)
Metal cutting tools	41,100	82,800	652,700	1,195,300
Metal forming tools	40,600	26,250	272,100	533,450

MACHINE TOOL SHIPMENTS*

	December 1970 ($000)	December 1969 ($000)	12 mos. 1970 ($000)	12 mos. 1969 ($000)
Metal cutting tools	81,300	118,150	988,600	1,192,450
Metal forming tools	36,900	33,600	451,350	405,100

Including foreign and domestic.
Source: National Machine Tool Builders' Association.

SHIPMENTS OF RAILROAD STEEL PRODUCTS

(NOVEMBER AND 11 MONTHS 1970)

	NET TONS			
	November	Per Cent Change*	Eleven Months	Per Cent Change*
Rails, trackwork and equipment	86,412	+33.4	968,230	+1.4
Freight and passenger cars and locomotives	131,443	-24.6	1,806,131	-13.4
Street railways and rapid transit systems	2,784	+17.2	42,611	-12.1

**Per cent change compares 1970 periods with like 1969 periods.*
Source: American Iron and Steel Institute.

Park with $7 million from the state Department of Transportation; and construction of a wheel truing machine building at Richmond Hill ($650,000).

● *Penn Central.*—A new transfer facility to speed movement of containers between railroad flatcars and ships has been opened by the PC at Port of New York Authority's marine terminal at Port Newark-Elizabeth, N.J. The facility, which will serve the steamship lines using the twin ports, can handle trainloads of about 60 flat cars (120 containers). Provision has been made for expansion to double the capacity (RA, June 8, 1970, p. 98).

● *Seaboard Coast Line.*—Awarded a contract to McLean Contracting Co., Baltimore, Md., for construction of a new drawbridge across the Cape Fear River at Wilmington, N.C. The project will cost an estimated $4.7 million, which will be shared by SCL and the Federal government. The bridge will be the largest of its type ever built in the U.S. The new structure, called a rolling lift bascule bridge, will have a 200-ft horizontal clearance between fenders, with unlimited vertical clearance. It will replace an existing bridge with a 95-ft horizontal clearance, built in 1916. Construction is expected to be completed by November 1972. During work, train service will continue without interruption

MAINTENANCE EXPENDITURES

● *Third quarter of 1970 8.9% above third quarter of 1969.*—Expenditures by Class I roads for maintenance of equipment way and structures in the third quarter of 1970 were up about $77.7 million, compared with the third quarter of 1969, according to report of AAR Economics & Finance Department, summarized below.

	Third Quarter 1970	1969	% Change
Maintenance of way and structures	$419,568,100	$390,604,601	+ 7.4
Maintenance of equipment	533,912,339	485,102,928	+10.1
Totals	$953,480,439	$875,707,529	+ 8.9

FOREIGN

● *British Railways.*—Awarded two contracts, worth a total of $14.5 million, to AEI-General Signal, Ltd., London, for resignaling of the West Coast main line and the Cadder-Falkirk line. AEI-General Signal, Ltd. London, is a joint venture company of General Signal Corp. of New York and General Electric Co., Ltd., London (no relationship to G.E., U.S.A.).

Market Outlook

CARLOADINGS

Loadings of revenue freight in the week ended Jan. 23 totaled 498,605 cars, according to the Association of American Railroads. This was a decrease of 0.4% below the preceding week, but 2.5% above the corresponding week last year. Ton-miles generated by carloadings in the Jan. 23 week are estimated at 14.5 billion, 4.2% above the corresponding week of 1970.

REVENUE FREIGHT CARLOADINGS

Commodity	Jan. 23 week	Jan. 16 week
Grain	28,888	26,725
Farm products	19,568	18,762
Metallic ores	19,330	19,293
Coal	97,610	107,053
Crushed stone, gravel & Sand	20,451	19,860
Nonmetallic minerals	8,975	8,725
Grain mill products	20,357	20,657
Food & kindred products	26,117	26,105
Primary forest products	25,466	24,283
Lumber & wood products (except furniture)	13,626	13,096
Pulp, paper & allied products	22,335	22,665
Chemicals & allied products	26,728	26,898
Petroleum products	11,132	10,579
Stone, clay & glass products	15,198	14,684
Coke	8,266	8,107
Metals & products	25,199	25,395
Motor vehicles & equipment	24,466	24,886
Waste & scrap materials	14,921	14,684
Forwarder & shipper assn. traffic	5,802	5,354
All other carloads	63,622	62,133
LCL traffic	548	541
Total cars loaded	498,605	500,485

CUMULATIVE TOTAL, 4 weeks	1971	1970	1969
	1,838,561	1,823,125	1,928,486
Estimated revenue ton-miles (billions) 4 weeks	53.1	52.0	54.1

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended Jan. 16 totaled 22,449 cars (6.3% below the corresponding week last year) and 35,648 trailers or containers (down 12.1% from 1970). Cumulative volume for the first three weeks of 1971 is 60,172 cars (off 3.7% from last year) and 94,925 trailers or containers (down 10.3% from 1970).

IN CANADA

7 days ending	Revenue Cars Loaded
Jan. 7, 1971	52,868
Jan. 7, 1970	50,174

TRANSIT

● *PATH.*—Hawker Siddeley Canada Ltd., which is building 46 new cars for the Port Authority Trans-Hudson Corp., has awarded a multimillion-dollar subcontract to Westinghouse Electric for propulsion and control equipment.

FREIGHT-TRAIN CARS

● *Fruit Growers Express.*—Has authorized 1971 expenditure of $23.5 million for new railroad equipment, including 300 57-ft 100-ton mechanical refrigerator cars and 650 insulated bunkerless cars. All will be built at FGE's Alexandria, Va., shop facility and will have foamed-in-place polyurethane insulation, sliding-sill cushioned underframes and roller bearings.

● *Norfolk & Western.*—Awarded $8,990,000 of equipment trust certificates, bearing dividends at the rate of 7% per annum, to a Salomon Brothers group. The certificates will finance not more than 80% of the $12,495,000 estimated cost of 1,020 100-ton open-top hopper cars.

● *Santa Fe.*—Filed application with the ICC for a $13.5-million competitive offering of equipment trust certificates on Feb. 17. The issue will be the first of two or more installments aggregating not more than $26.25 million. Proceeds will represent about 80% of the cost of 1,680 freight cars.

● *Southern Pacific.*—Ordered 500 70-ton rigid-frame box cars from Gunderson, Inc. This is the third 500-car order SP has placed with Gunderson in the past 12 months (RA, January 25, p. 84). The value of the three orders totals $24 million. Cars in the new order are being delivered at the rate of 15 a day.

NEW FACILITIES

● *Long Island.*—Will extend its electrification from Huntington to Northport, 5 miles, and from Hicksville to Republic, 7 miles (including 10 substations necessary for third-rail and track requirements), at a cost of $20 million; 27 additional substations will be constructed in existing electrified territory at a cost of $15 million. Other projects (costs in parentheses), include: terminal improvements at Northport and Republic ($10 million); construction of a car-washing facility and an extension to the existing pit and building at Babylon, financed through the Metropolitan Transportation Authority with state funds ($825,000); an extension to platform No. 10 at Penn Station, also financed through MTA with state funds ($400,000); elimination of three grade crossings at Massapequa

Viewpoint

What is the role of regulation?

It's one thing, for railroad men to decry over-regulation and all the problems it creates. It's quite another thing for the ranking anti-trust expert in the Federal government to agree.

Railroad men can rather easily be put-down as chronic complainers, by those with vested interests in status-quo regulation. But it is not so easy to apply the put-down technique to the Assistant Attorney General in charge of the Justice Department Anti-Trust Division, Richard W. McLaren by name.

McLaren's thesis on regulation of surface transportation is that "for the most part, only inefficiency is rewarded . . . and in the long run the nation's resources are seriously mis-allocated."

Under ICC rate-making procedures, he says, "rates generally are allowed to rise to the level of the highest cost carrier in the market . . . Shippers, consumers and carriers all pay the cost of high rates and inefficiency."

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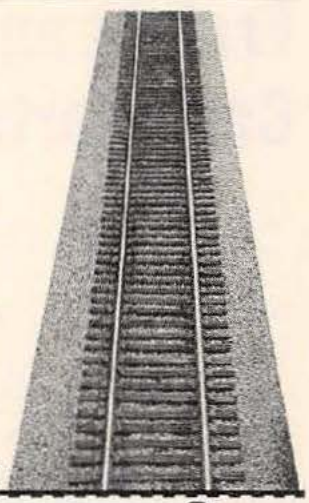

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Bethlehem Steel Corporation	3
Brenco Incorporated	6
Cities Service Oil Co.	4
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FWI Pollution Control Division	26
General Electric Company	BC
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Humble Oil & Refining Co.	24-25
International Nickel Co.	10-11
Kerite Company, The	IBC
LaMere Industries, Inc.	39
Matisa Equipment Corp.	39
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JOHN LEVETT'S

WORLD REPORT:

Europe: Faster trains coming

The bears may be growling in the U.S. But in other parts of the world the railway scene is distinctly bullish.

In Europe, for instance, all the signs point to development of a Tokaido-type high-speed network within the next ten years.

Work has already begun on the new super-speed line from Milan to Naples, in Italy. Proposals for new lines are being discussed in Switzerland and Germany. And French National Railways (SNCF) may be next to lay a new line for speeds up to 185 mph.

Proposals for the new line have been cogently argued by top SNCF officers. Now they are waiting with fingers crossed for publication of the French Government's sixth economic plan.

The plan could give the green light for work to begin. Or it could claim the economy still isn't strong enough for the investment required.

Running from Paris to Lyon, the new line would reduce rail distance between the two cities from 312 miles to 260 miles—and journey time would be slashed to two hours.

In Paris just before Christmas SNCF's Director General, Roger Guibert, told me: "The new line would be profitable. We could amortize it from revenues in 20 years—with only a 20% supplement on existing fares.

FRENCH TURBOTRAIN hits 125 mph on the run from Paris to Cherbourg. Now, French railmen plan a new line where similar trains will operate at 185 mph.

"And this line will only be the beginning. We have several other projects —all aimed at giving us high-speed connections with other parts of Europe."

Beauty of the French plan is that the new line will use existing penetrations into both Paris and Lyon—avoiding the tremendous cost of surface railway construction in metropolitan areas. And it will avoid the major limitation of the New Tokaido Line—lack of compatibility with existing lines.

Trains from the new line will work into linking routes throughout the southeast of France—though not, of course, at the same high speeds.

Traction will be from high-rated gas turbine trainsets, similar—though with more power—to those already running at 125 mph between Paris and Cherbourg.

The railway scene bustles down under

For a really lively railway scene, look at Australia. More hard cash is being invested in railway development than at any time in the continent's railway history. Spurring construction, of course, has been mineral exploitation. But public service railroads are also enjoying a boom.

The number of works in progress is impressive: reconstruction of Commonwealth Railways' line from Port Augusta to Kalgoorlie (cost $43.2 million); new standard-gauge line from Port Augusta to Whyalla ($8.4 million); a link between Coalcliff and the Burragorang Valley coal mines ($96 million); the Goonyella coal line ($43.2 million); and a new line to Alice Springs ($60 million).

Add to this a series of developments in central and northern Queensland worth $86.4 million; construction of the Robe River line to Cape Lambert, Western Australia ($300 million); and building of the Hamersley Iron extension to Paraburdoo, Western Australia; and still you have only part of the picture.

In Sydney, more than $96 million is being spent on the Eastern Suburbs railroad development, to take rail transport out to the beach suburbs of Bondi, Bronte and Randwick. And in Melbourne a similar amount is being spent on construction of a rapid transit system in the center of the city.

Australia's second railway age seems likely to go on as transport demand grows. One thing seems clear—there will be no mad dash into expressway development. So far none of the country's major cities are linked by motorways. Railways are proving a better investment.

What seems likely is that Australia will soon be wanting—and probably building—high-speed intercity lines of the type now being developed in Europe. And if they do, that will mean a big expansion of the market for those suppliers able to offer high-speed equipment at the right time and price.

And, not far from Australia, the Tasmanian Premier has asked the Commonwealth to provide financing for a proposed 37-km railway line, plus a new freight yard, locomotives and freight-train cars.

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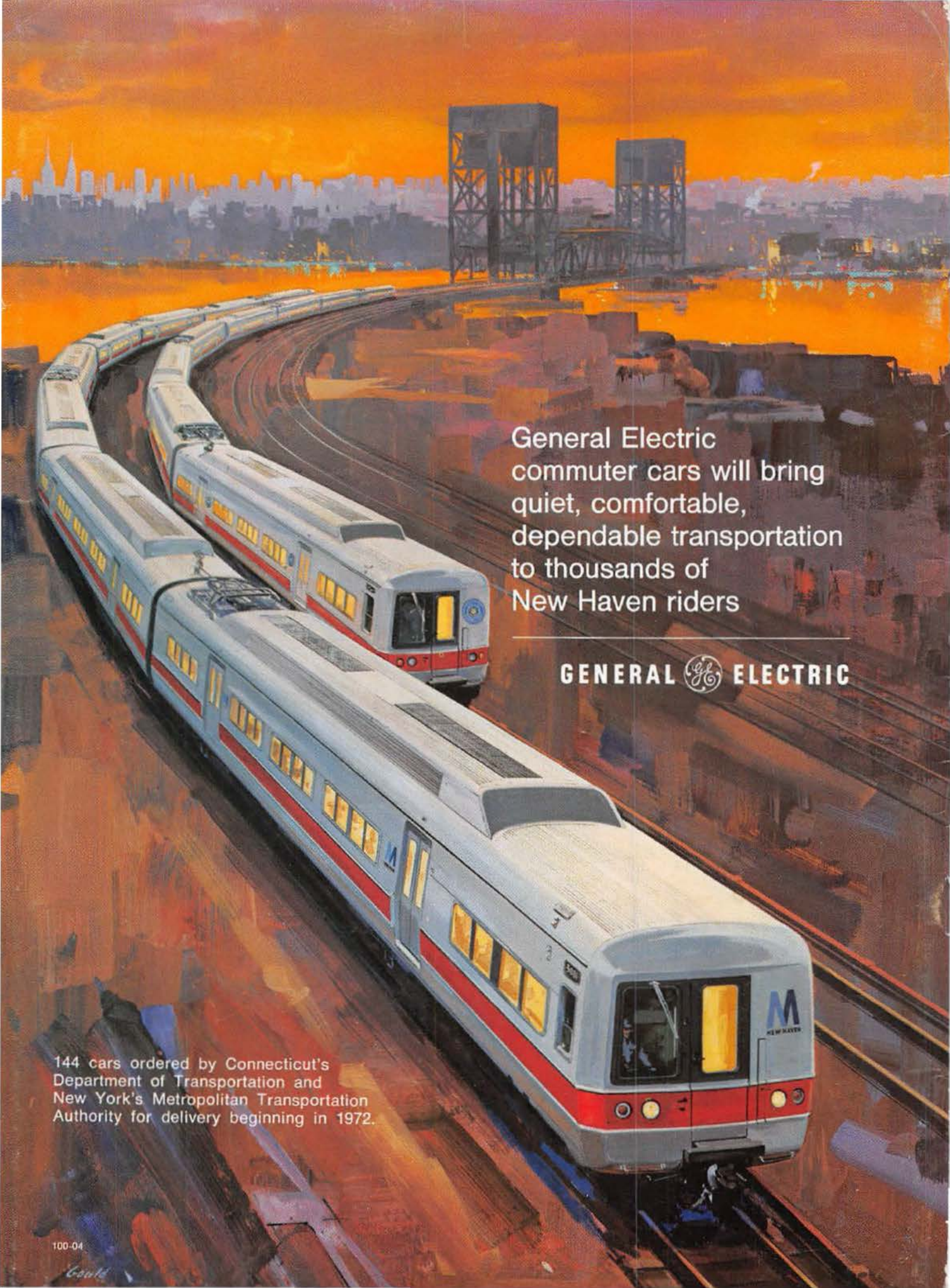
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